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Forest Management Agreements

Five-Year Review
1986-91

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Forest Management Agreements

Government
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**Five-Year Review
1986-1991**



Ministry of
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THIS REPORT IS
DEDICATED
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INTRODUCTION

BACKGROUND

Forest Management Agreements (FMAs) came into being in Ontario through an amendment to the Crown Timber Act in 1979. The Act as amended provided that the Minister of Natural Resources, subject to the approval of the Lieutenant-Governor-in-Council, could enter into Forest Management Agreements with private sector companies.

The FMAs, each of which cover a specific section of Crown land, replace existing licensing arrangements with an Agreement which requires the Companies to manage the forests in the FMA area on a sustained-yield basis. In addition to harvesting, the FMA holder is responsible for all regeneration and other silvicultural activities necessary for proper forest management, including the construction of access roads. As well the FMA holder is responsible for addressing the environmental concerns and those of other forest users.

As of July 1991, there were 28 FMAs in the province, covering a total of 180,962 square kilometres. This represents 70% of the 257,244 square kilometres of licensed forest in the province. The location of these Agreements is shown on the map.

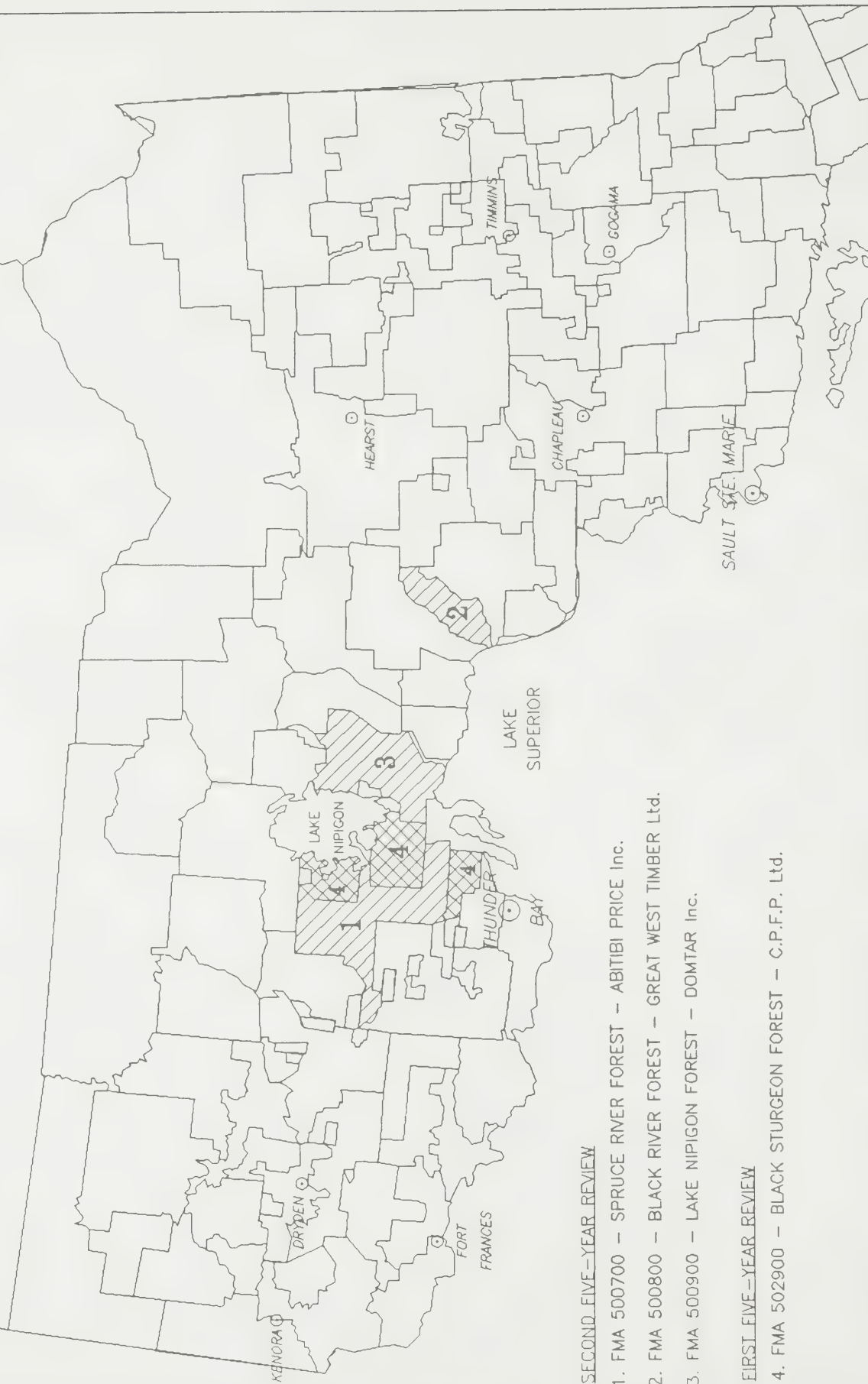
The Ministry of Natural Resources provides certain funding, and must approve the required management documents submitted by the Companies. The Agreements are for 20 years, but Section 15 of the Agreement provides that every five years, the Minister must evaluate how the Company has carried out its obligations under the Agreement and the associated management documents. If satisfactory, the FMA is extended for another five years.

The obligations of the FMA Agreement, in general terms, are;

- a) Adherence to submission dates for Timber Management Plans, Annual Work Schedules, and Reports.
- b) Adherence to the maintenance of harvesting operations at a level between 90% and 110% of the maximum allowable depletion and any liabilities or damages following the fifth year of the Agreement that the planned requirements are not harvested.
- c) Adherence to meeting the obligations for treatment of Not Satisfactory Regenerated (NSR) lands.
- d) Compliance with the "ground" rules which describe the procedures associated with;
 - i) the depletion and silvicultural treatments,
 - ii) road construction,
 - iii) compliance with other forest uses.

FOREST MANAGEMENT AGREEMENTS

1991 FIVE YEAR REVIEW



SECOND FIVE-YEAR REVIEW

1. FMA 500700 - SPRUCE RIVER FOREST - ABITIBI PRICE Inc.
2. FMA 500800 - BLACK RIVER FOREST - GREAT WEST TIMBER Ltd.
3. FMA 500900 - LAKE NIPIGON FOREST - DOMTAR Inc.

FIRST FIVE-YEAR REVIEW

4. FMA 502900 - BLACK STURGEON FOREST - C.P.F.P. Ltd.

FIVE-YEAR REVIEWS

In 1986, the Minister released the first five-year reviews of three of the FMAs in the province as was required by legislation. The Agreement holders of these three FMA areas met all of the required obligations. All three FMAs were extended for a further five-year period.

The three FMAs are;

1. Abitibi-Price Inc., Spruce River Forest
- FMA 500700
2. Great West Timber Limited, Black River Forest
- FMA 500800
3. Domtar Inc., Lake Nipigon Forest
- FMA 500900

A second five-year review was conducted in May/June 1991 on these three FMAs.

In addition in 1986 the Minister signed the 26th Forest Management Agreement;

Canadian Pacific Forest Products Ltd., Black Sturgeon Forest
- FMA 502900

In June 1991 the first five-year review of this FMA was conducted.

The objectives of the reviews, as outlined in Appendices "A" and "B", included;

- To undertake a fair and objective review of the performance of the Agreement holder vis-a-vis the obligations under the Agreement.
- To examine Company records with regard to their adequacy and their conformity with the Ministry's records.
- To examine the relationships between the predicted and the actual volume/area yields in the timber management plan.
- To examine and report on the relationship between planned and actual wood harvested for the five-year period.
- To select and field inspect silvicultural projects.
- To determine the degree to which other forest users and other forest values have been accommodated in management planning and operations.

- To examine and report on Company forest management activities conducted beyond the obligations under the Agreement,
- To examine and report on examples of innovative forestry practices and beneficial forest stewardship,
- To examine and report where the Company has taken a positive approach beyond the planning process to address public concerns,
- To examine and report on Company participation in the field of research and tree improvement,
- To examine and report if overall, the FMA objectives, to manage Crown timber on a sustained yield basis and supply the mills identified in the Agreement through the integration of harvest, renewal, and maintenance activities, are being met, and,
- To make recommendations on the extension of the Agreement's term.

The second five-year review was more intensive than the first five-year review in that the second review included;

- A review of the recommendations of the first five-year review and a status report on their implementation.
- A review of fifth-year stocking assessments.
- An examination of Free-to-Grow (FTG) assessments.

THE REVIEW PROCESS

The initial five-year reviews were conducted by committees of Ministry staff, appointed from outside the region being reviewed. Each committee was headed by a senior Ministry administrator. In an effort to conduct the five-year reviews in the most objective and "arms-length" manner, the review committees of recent years have been comprised of independent auditors supervised by a Ministry official.

In the 1990 five-year reviews, the Ministry in a step to further remove its involvement in the review process, hired a Review Co-ordinator to co-ordinate two teams or "committees" of three individuals per team.

In the 1991 reviews, the Ministry completely removed its involvement in the process by selecting, through public tender, a consultant to hire the review committee members and co-ordinate the entire 1991 review program. The committee members are all non-Ministry staff and are individuals from disciplines in biology, forestry, and silviculture with senior industry/government background. The consultant/ co-ordinator in the 1991 reviews was a financial analyst with a discipline in reviewing public reports.

The five-year reviews of the Forest Management Agreements followed a process very similar to that of a financial audit.

- the Review Committee was supplied with information and documentation from the Agreement companies and was provided access to all company records including; the approved Operating Plan for 1986-1991, the Annual Work Schedules for each year 1986-1991, the Annual Reports, the five-year Summary Tables, and other documents outlining FMA activities, depletion, renewal, and maintenance.
- the Review Committee was able to examine the documentation supplied by the Company prior to the review team's field visit.
- the "physical" review lasted one week, which included two to three days of field inspections, two days examining Company records/ invoices (usually in the head office or woodlands office), and interviews with senior company personnel.

In addition, the Review Committee had an opportunity to liaise with Ministry staff, and discuss with them concerns or problem areas with respect to the Agreement. In the 1991 reviews the consultant held public hearings, in which other users of the forest were able to discuss their concerns or problem areas with respect to the Agreement.

Similar to a financial audit, the five-year review process was a review of the Agreement holder's obligations, both contractual and non-contractual. The review was not a "re-working" of all of the information and documentation that had taken place over the period. The Review Committee members were all trained professionals who were able to analyze the information and documentation effectively and efficiently.

In addition the Review Committees, because of their previous experience in forest management and silvicultural activities, reported to the Companies and the Ministry, their observations concerning the management of the Agreement area, with specific attention to silvicultural techniques used. Their specific recommendations are summarized at the end of each review.

Each of the five-year reviews in this document contain a "Review Committee Statement" in which the individual review teams "signed off" the review.

GENERAL OBSERVATIONS

The Committee was able to fulfil all of its tasks as per the Terms of Reference.

All of the FMA Agreement holders whose operations were reviewed in the 1991 Five-Year Reviews, met most of their contractual obligations. In addition the four companies involved, some to a greater extent than others, demonstrated beneficial forest management activities outside of their contractual obligations. All of the companies reviewed generally have a pro-active attitude toward the needs of other forest users and demonstrated their willingness to accommodate fish and wildlife concerns in their operations. Three of the companies have invested in GIS systems which will aid in management planning and reporting.

All of the NSR obligations were met, except for the one Company whose FMA was five years old. This Company did not meet its annual target levels and therefore has fallen behind in its NSR commitment. The Company is presently conducting a field survey to track the previously depleted areas and to reclassify them if necessary. The Company plans to treat all NSR areas, as required by the Agreement. In one FMA the original 20 year commitment had been surpassed.

The integration of silvicultural planning with that of harvesting has improved over the five and ten year histories of the four FMA's reviewed. The "transfer" of responsibility for silviculture, tending, and planting activities from government to industry has been accomplished. Among the FMAs that were ten years old there was a very noticeable increase in the land base area that was being returned to productive forest in the 1986-91 period as compared to the 1981-85 period. The Committee was impressed by this "positive momentum" over the two periods, and the Committee was encouraged by the further gains forecast in the 1991-96 TMPs.

It was noted by the Review Committee members (who had all been on previous FMA reviews) that there was a noticeable improvement in the preparation of documentation and in the format for presentation of information to be audited, especially among those companies that had been through a five-year review previously.

One major concern that the Review Committee had involved the **classification of natural regeneration**. It became evident to the Review Committee, after dozens of site inspections, that natural regeneration on FMA lands is greater than the recorded data indicates. As illustrated in the following graph the total area recorded as regenerated on the four FMAs reviewed in 1991 amounted to 64,713 hectares as compared to 121,410 hectares harvested. Of the area recorded as regenerated only 15,646 hectares or 24% was natural. Considering the fact that natural regeneration was successful but not reported on many sites on the FMAs reviewed, it is apparent that natural regeneration has been understated.

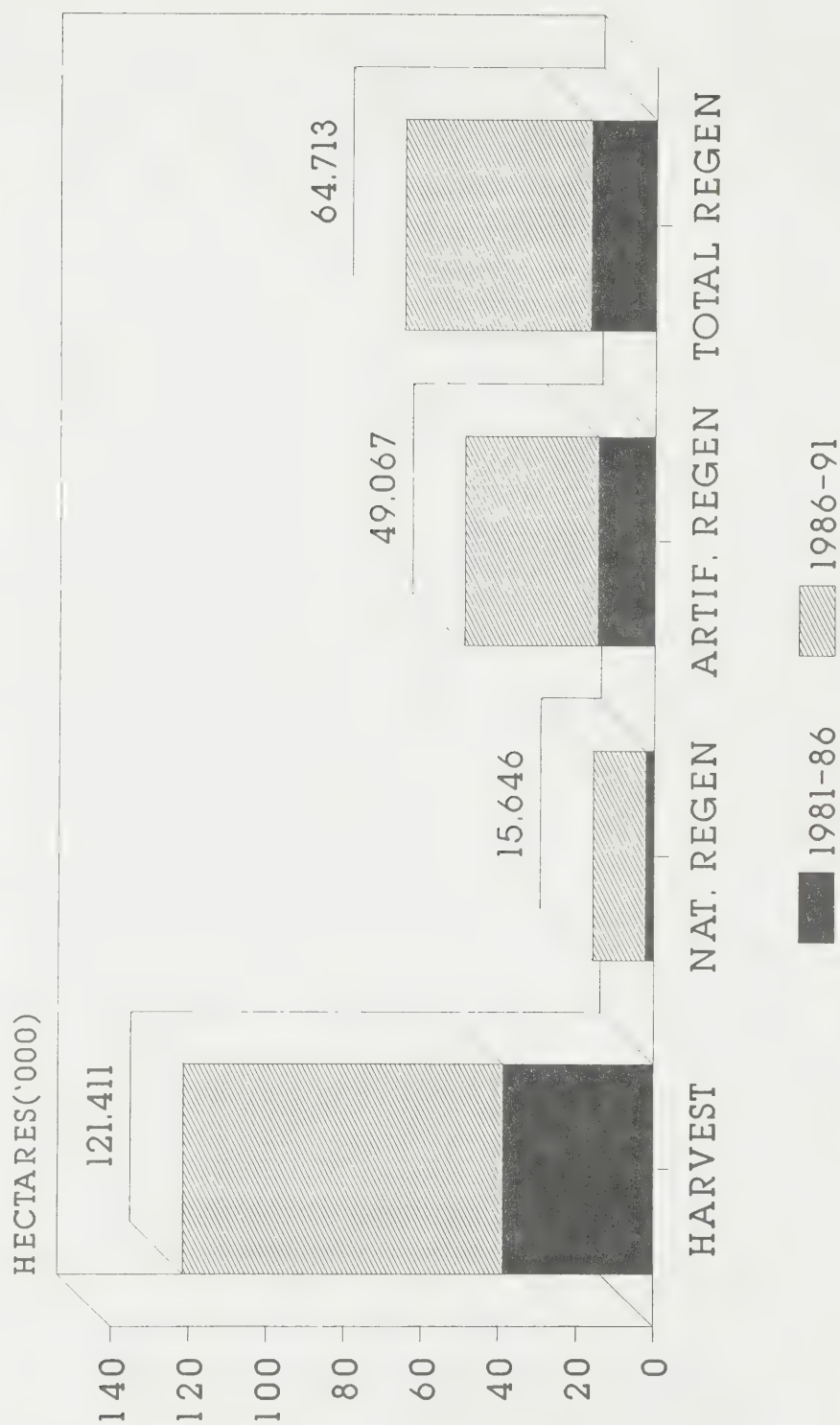
The understatement of natural regeneration is the result of companies not prescribing and reporting areas for natural regeneration at the time of harvest.

The subject of natural regeneration was discussed with the Companies and Ministry staff during the 1991 reviews and the Committee was encouraged to see that many of the problems dealing with natural regeneration are being addressed in the new 1991-96 Timber Management Plans (TMP).

1981 - 1991

HARVEST AND REGENERATION

FMA's 500700, 500800, 500900, 502900



However, to ensure that the Companies and Ministry properly report natural regeneration in the future, the Committee has made specific recommendations concerning FTG surveys and natural regeneration that must be addressed in the next five year review of the FMAs.

While the Committee recognizes the efforts of the Industry and the Ministry in developing a new **mixed wood** working group for selected FMAs, the Committee is concerned that the new working group, with a minimum stocking of only 50% acceptable species in spruce, jack pine, balsam fir, poplar, birch or cedar, may eventually lead to a decrease in the availability of higher quality single species stands. The Committee encourages the Industry and Ministry to re-evaluate the minimum stocking requirements of the new mixed wood working group.

The Committee noticed a wide variation among FMAs in the quality of plantations. The Committee in one of the reviews has made the recommendation to the Ministry "that benchmark yield performance ratings be assigned to specific site and species classifications, so that stand or forest yield can be monitored". The Committee feels that both stocking and growth should be used to determine the success of silvicultural prescriptions.

The Committee was impressed by several of the experiments with new silvicultural techniques, aimed at maximizing site productivity while lowering the cost of application. Examples included; "mini" seed plugs, ground application of herbicides during scarification operations, and whole tree chipping. The latter improves utilization and reduces the silvicultural effort required to prepare the site.

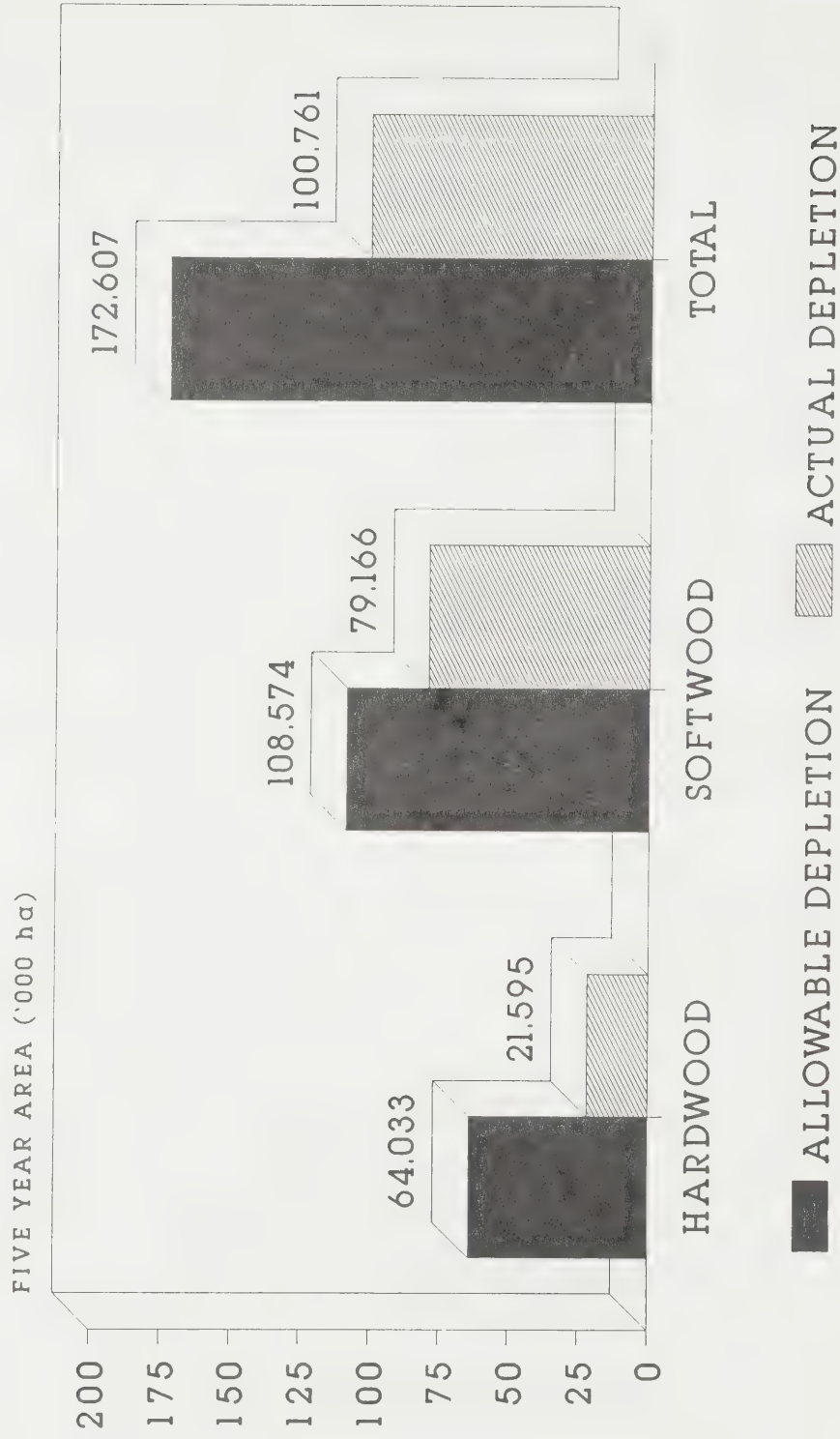
The Committee noted that the companies have made large investments in new technology to simplify and improve planning, recording, and reporting. Examples include; GIS systems, dataloggers, and other computerized data management systems.

The complexity of "wood flows" that exist in the Forest Industry in Ontario was very evident in the four FMAs reviewed. The Committee noted that although only four companies are responsible for the FMAs, a total of 16 companies operated on the FMAs under review, including small and large sawmills, a hardwood veneer and plywood plant, several pulp and paper mills, and four Native Bands. The wood exchange as well as the secondary trade in by-product wood chips, although complex, ensures good wood utilization.

The Public Concern Meetings, which have become an important part of the review process, were well received and allowed other users of the forest an opportunity to discuss their concerns regarding the management of the Forest Management Agreement Area. The Review Committee was able to physically inspect areas of concern during the site visits, and all of the Public concerns have been addressed in each of the reviews.

COMPARISON OF 1986-1991 ALLOWABLE VS. ACTUAL DEPLETION

FMA's 500700, 500800, 500900, 502900



RECOMMENDATIONS

It was the Review Committee's recommendation to the Minister of Natural Resources that each of the four FMA's reviewed be granted an extension to the FMA Agreement term.

There were however, three problem areas common to a number of the FMAs reviewed in 1991, that the Committee encountered during the 1991 FMA reviews and that the Committee felt required further attention; the uncertainty of silvicultural funding levels, reporting of natural regeneration, and the declaration of surplus timber.

With regard to the former the Review Committee is concerned with the fall-off in silvicultural funding. It is a general concern that advances in silvicultural efforts and silvicultural expenditures of the past could be put into jeopardy if future funding is suspended. Of particular concern is the effect reduced funding will have on the tree planting levels.

Here are the Committees' recommendations pertaining to these problem areas;

- i) silvicultural funding - "that the Ministry expedite approval of and maintain annual funding levels so that the silvicultural obligations of the Agreement are not compromised".
- ii) natural regeneration - "that areas prescribed for natural regeneration be reported at the time of harvest",

"that the prescriptions for areas of natural regeneration made at the time of harvest should designate the specific working group or forest unit",

"that the Company track the land base and ensure that FTG stands are placed back into the forest inventory as soon as possible",

"that *benchmark* yield performance ratings be assigned to specific site and species classifications, so that stand or forest yield can be monitored".
- iii) surplus declaration - "that in the event the Company should forecast depletion levels during the next five year period to fall below the 90% level of those stated in the current TMP, the Company should take immediate action to request, with reasonable explanation, an undercut variation from the Ministry and to amend the TMP with a surplus declaration".

**SECOND FIVE-YEAR REVIEW
ABITIBI-PRICE INC.**

**SPRUCE RIVER FOREST
FMA 500700
1986-1991**

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1. INTRODUCTION

1.1 PURPOSE OF THE REVIEW

The Ministry of Natural Resources (the "Ministry") and Abitibi-Price Inc. (the "Company") signed a Forest Management Agreement or FMA (the "Agreement") on December 15, 1981. This Agreement, number 500700, was designated the **SPRUCE RIVER FOREST**. The primary purpose of this Agreement was to provide a continuous supply of forest products for the wood processing plants of the Company at Thunder Bay, Ontario and to ensure that the Spruce River Forest is harvested and regenerated to produce successive crops of timber on a sustained yield basis.

A review of the first five consecutive years of the Agreement was conducted on the Spruce River Forest in 1986. As the result of a favourable report of the Company's performance of its obligations under the Agreement, the Ministry and Abitibi-Price signed an extension to FMA 500700 on December 15, 1987 with the new Agreement having a term of 20 years commencing April 1, 1986.

The review of the second five-year period (1986-1991) of the Agreement was conducted on the Spruce River Forest to determine whether the obligations of the Company under the Agreement have been satisfactorily performed and to recommend to the Minister of Natural Resources whether the remaining period of the Agreement should be extended for a further term of five years.

1.2 THE REVIEW COMMITTEE

The review was carried out by a committee (the "Committee"), engaged by Duncanson Investment Research Inc. under contract with the Ministry. The Committee members were:

Mr. John M. Duncanson, B.Sc.F., R.P.F., Review Coordinator
- President, Duncanson Investment Research Inc.
- independent financial analyst specializing in the forest industry

Mr. Victor I. Sleep, B.Sc.F., R.P.F., Private Forestry Consultant
- forestry specialist - 39 years in Boreal Forest management
- Manager of Forestry Services (Retired), Spruce Falls Power & Paper Co.

Ms. Kandyd Szuba, B.Sc.F., Ph.D., Private Consulting Biologist
- wildlife specialist - 14 years researching the habitat requirements of birds and other wildlife of the Boreal Forest.

Mr. Charles J. Heeney, B.Sc.F., Dip R.M., Private Consulting Silviculturalist
- silvicultural specialist - 35 years in forest management and silviculture
- Supervisor, Forest Production and Control (Retired) OMNR

1.3 TASKS OF THE REVIEW COMMITTEE

The Committee's assignment was to undertake a fair and objective review of Abitibi-Price's performance on the Spruce River Forest during the second five-year term, vis-a-vis its obligations under Forest Management Agreement 500700, as specified in detail in Appendix A - "Terms of Reference for the Second Fifth-Year Review of a Forest Management Agreement", and to make recommendations to the Ministry on the extension of the Agreement's term according to the "evergreen" section of the Agreement (Section 15, Paragraph 33).

The review was conducted by:

- inspecting the depletion, silvicultural, and road records for adequacy and for conformity with the management plans and ground rules of the Agreement,
- comparing the levels of harvest and treatment of not satisfactorily regenerated (NSR) lands outlined in the Annual Reports with the levels required by provisions of the Agreement,
- selecting and field inspecting harvest cuts, silvicultural projects, and road construction typical of the techniques employed on the forest for conformity with the Agreement holder's records, and the standards outlined in the ground rules,
- determining the degree to which other forest users and other forest values are accommodated in management planning and in field operations,
- meeting with Company and Ministry district staff to identify problem areas and Agreement concerns on the part of either party, and,
- meeting with other users of the forest in and adjacent to the Agreement area, i.e. local cottagers, hunting and fishing groups, native groups, and identifying with them problem areas or concerns on the part of the public with respect to the Agreement, its administration, and the working relationship with the Company and Ministry staff.
- examining and reporting upon the relationship between the harvest and growth, by applying free-to-grow (FTG) standards, including forest regeneration success, that has occurred on the forest during the period,
- reviewing the recommendations of the first Five-Year Review and reporting on the status of implementation, and,
- examining and reporting if overall, the FMA objectives, to manage Crown timber on a sustained yield basis and supply the mills identified in the Agreement through the integration of harvest, renewal, and maintenance activities, are being met.

2. PROCEDURES AND FINDINGS

2.1 MANAGEMENT PLANNING

2.1.1 THE PREPARATION AND SUBMISSION OF PLANS

The Forest Management Plan for the Spruce River Forest was prepared in 1981-82. The revised draft was due on July 4, 1983, and was submitted and approved on July 13, 1983.

The 1986-91 Operating Plan under the above mentioned Management Plan was due September 30, 1985. A draft plan was prepared, submitted for review, and returned with a list of required alterations on July 21, 1986. In August 1986 the Ministry confirmed a revision schedule with the Company calling for resubmission of the revised plan by the Company on August 28, 1986. The Plan was approved by the Ministry on September 11, 1986.

After public review and after compliance with an exemption order by the Ministry of the Environment, the plan was approved on October 17, 1986. The plan approval was seven months beyond the time specified in the Agreement. From April 1, 1986 to October 17, 1986, operations were carried out under the auspices of the approved Annual Work Schedule (AWS). The five AWSs were all submitted and approved on time.

The Timber Management Plan (TMP) for the Spruce River Forest for the five year term 1991-1996 was prepared in accordance with the Timber Management Planning Manual for Crown Lands in Ontario. The Plan due on September 30, 1990 was submitted 48 days early on August 13, 1990 and was subsequently approved ahead of all other pending plans on March 6, 1991.

2.1.2 PLAN IMPLEMENTATION

The Agreement requires that the Company conduct its operations in accordance with the approved Management and Operating Plans and Annual Work Schedules.

Silvicultural operations and road construction performed by the Company are summarized in Table 1.

The Committee has examined Company planning documents and performance records supplemented by ground inspections for harvest cut and road construction.

The actual location of the harvest cut and road construction conforms generally to the area allocated for harvest and to planned road locations. Road deviations are discussed in Section 2.6 "Road Construction and Maintenance". Explanation of the variation between planned and actual harvest levels is found in Section 2.3 "Harvest Levels, Maximum Allowable Depletion, Yields, and Wood Flow".

TABLE 1

Summary of Company Forest Operations with Ministry Funding

FMA Expenditure and
Accomplishment Report
For The Five-Year Period
1986-1991

FMA 500700
Spruce River Forest
Abitibi-Price Inc.

Activity		Area (hectares)	Cost (dollars)
Actual Harvest		37,355	
Natural Regeneration		10	
Artificial Regeneration	- Planting	8,885	
	- Seeding	5,662	
Total Regeneration		14,557	\$ 4,515,588
Site Preparation	- Mechanical	10,894	
	- Chemical *	4,858	
* on mechanical			
Total Site Preparation		15,752	\$ 3,427,252
Net Site Preparation		10,894	
Tending	- Chemical Cleaning	9,309	
	- Manual Cleaning	72	
Total Tending		9,381	\$ 497,484
Other Silvicultural Payments *			\$ 2,544,892
* includes; cost of chemicals, stock production and cone collection			
Total Silvicultural Payments			\$10,985,216
		(kilometres)	
Road Construction	- Primary	60.6	
	- Secondary	186.7	
Total Road Construction		247.3	\$ 5,329,629
Road Maintenance		478.7	\$ 965,980
Total Road Payments			\$ 6,295,609
Total Payments			\$17,280,825

Source: Annual Reports, Tables 6.1, 6.4.1, 6.6, 6.4.3

Figure 1 compares planned and actual levels for the five year plan for harvesting operations (83%), regeneration (29%), site preparation (102%), tending (59%), and road construction (62%).

The shortfall in regeneration is due to the fact that no natural regeneration was reported compared to an Operating Plan objective of 36,373 hectares. Total artificial regeneration slightly exceeded the plan with an increase in seeding more than compensating for a shortfall in planting due to stock and funding constraints. The question of documenting the success of natural regeneration is a matter of concern on the Spruce River Forest and will be discussed in Section 2.2.2 "Conformity of Harvest and Silvicultural Operations with the Ground Rules".

Reduced tending operations (59% of planned) were attributed to fewer plantations, less competition, and a shortage of NSR areas suitable for aerial tending.

2.2 THE GROUND RULES

2.2.1. KNOWLEDGE AND FAMILIARITY WITH THE GROUND RULES AND THE AGREEMENT

Based on discussions with Company staff both in the office and in the field, it was apparent that they had a thorough knowledge of the Forest Management Agreement and the Ground Rules.

2.2.2 CONFORMITY OF HARVEST AND SILVICULTURAL OPERATIONS WITH THE GROUND RULES

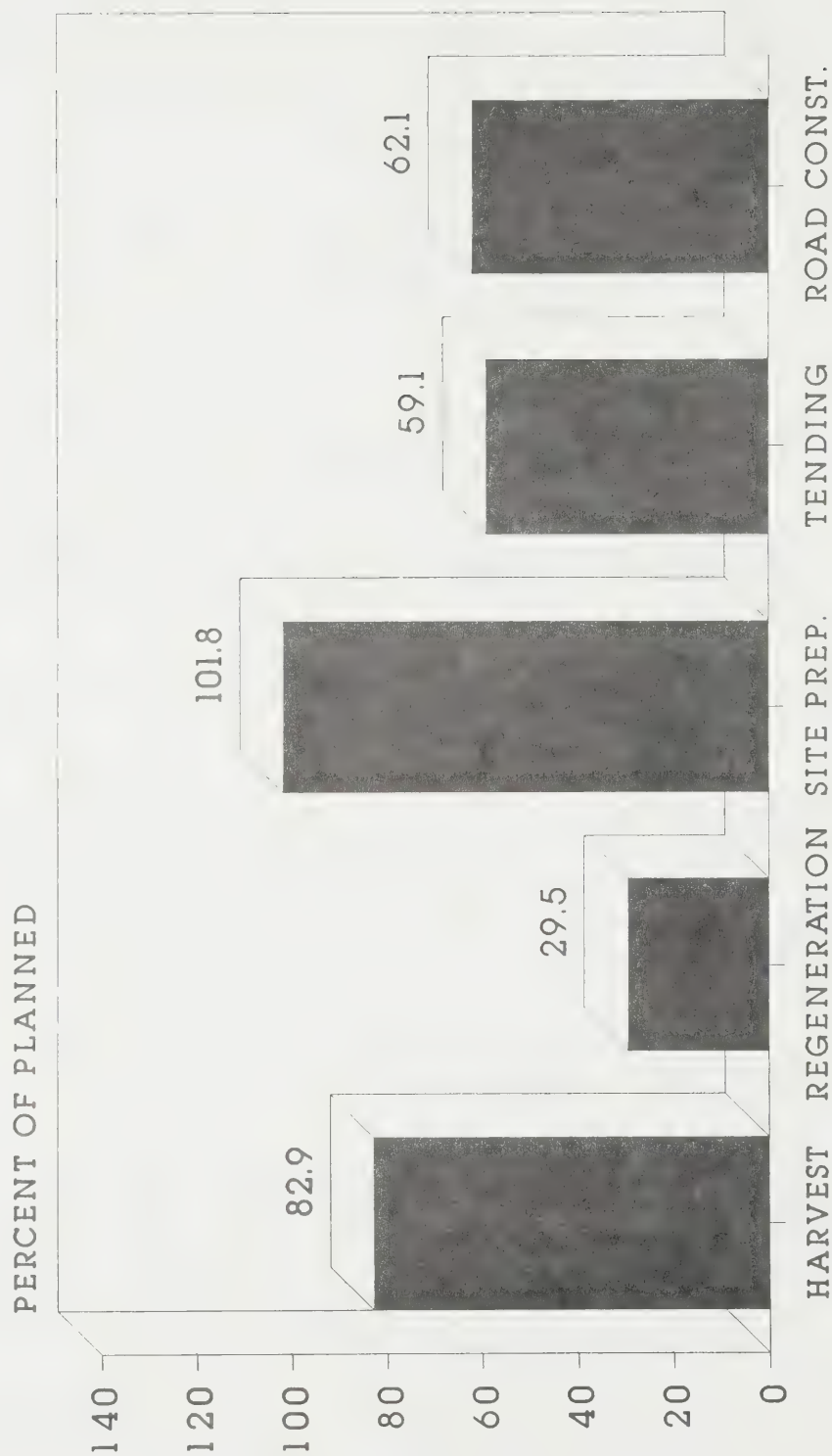
In the first ten years of the Spruce River FMA the Company has developed and refined silvicultural practices consistent with the Ground Rules and has adapted to site conditions, mill requirements, and the requirements of wildlife and other users of the forest. The current program is limited by fiscal constraints to treating some 30% of the annual cutover by planting and seeding and the balance is left for natural regeneration.

The Committee examined the silvicultural program both through office records and two days of field visits to over twenty randomly selected sites.

The artificial regeneration program consists of planting an average of 1,800 hectares per year, mainly black spruce container stock, and seeding 1,130 hectares to jack pine. On the sites inspected by the Committee, black spruce plantations are well stocked and many exhibit excellent growth. The jack pine sites, principally on third party areas, are well managed and have achieved good stocking. High density and overstocking may reduce growth on some areas. On some upland sites planted to spruce, jack pine ingrowth quickly became dominant, suppressing the plantation and changing the working group.

Several other sites were visited by the Committee, including a manual tending project to space the pine and release the spruce. Pine and spruce competition is a problem that is recognized. The Company plans to vary regeneration treatment schedules to avoid planting spruce on jack pine sites. The Committee encourages this initiative and suggests that the Company take it one step further and

FIGURE 1: COMPARISON OF 1986-1991
OPERATING PLAN VS. ACTUAL
FMA 500700 SPRUCE RIVER FOREST



Source: 1990-91 Annual Report
1986-91 Operating Plan.

identify sites before harvest to be regenerated to jack pine, preparing silvicultural prescriptions using site preparation and seeding wherever possible, to ensure good jack pine stocking. The Company is encouraged to continue and intensify the use of the Forest Ecosystem Classification (FEC) for Northwestern Ontario and to continue working with the Technology Development Unit (TDU) in Thunder Bay to provide additional training and awareness to staff in the use of site specific silvicultural prescriptions. This increased knowledge and awareness will further enable the Company to manage the forest for all species and products as they move toward the goal of total forest management.

At the time of this review the Company uses only 50% of the forest products harvested annually on the FMA, mainly spruce. The remainder, mostly jack pine and poplar, goes to other mills in the area. With the current ceilings on planting stock and funding there are not enough resources to regenerate artificially the area being harvested. The Company has an obligation to manage the forest in the most efficient manner with the funds available. This can only be achieved by recognizing and managing distinguishable sites and soil types for the most appropriate species regardless of the present stand composition and taking full advantage of planned natural regeneration. Silvicultural prescriptions designed to grow the species best suited to the site will reduce user conflicts, reduce costs, and produce the healthiest and most productive forest.

RECOMMENDATION: That the Company manage the forest to obtain the maximum benefit from silvicultural expenditures and to produce species and products best suited to the soils and site conditions encountered.

The Company is tending plantations with glyphosate with excellent results. During the period under review the Company has been able to reduce their tending program to an area of 1,860 hectares annually, (59% of planned), by careful site selection and application of the chemical. This program is almost exclusively directed to plantations. The Committee noted on the site inspections and from assessment data provided that the Company has not been releasing natural spruce and balsam fir regeneration from alder and other competing vegetation. The Company is encouraged to consider this natural conifer regeneration in assessing future tending requirements.

One method of obtaining natural regeneration is by means of a silvicultural prescription designed to secure successful regeneration without further treatment. The harvest is the silvicultural treatment and natural regeneration is reported at that time. On the Spruce River Forest, in the period under review, the Company decided not to report natural regeneration at the time of harvest. Instead the Company decided to wait for data from fifth year stocking assessments to determine the success of areas of natural regeneration and for FTG surveys to return successful areas to the forest inventory data base.

On the Spruce River Forest 70% of the harvested area is left for natural regeneration. To date some 40,000 hectares from the first ten years of operation on the forest are in this category. Based on discussions with Company and Ministry foresters and ground checks during the site visits, it is apparent that the problem is not one of a lack of regeneration to acceptable species and stocking, but one of planning and reporting. The Committee was surprised that natural regeneration was not being reported.

To date approximately 15,000 hectares of fifth year stocking assessments have been done including 8,500 hectares on areas of natural regeneration of which 70% meets the minimum conifer stocking level. Part of the reason 30% of the area is understocked is that natural regeneration, in particular black spruce, requires more than five years to reach minimum stocking levels. The 8,500 hectares consist of areas depleted during the first four years of the FMA (1981-1984). The records understate the total regeneration during the first ten years of the FMA because these areas have yet to be reported as regenerated. A further discussion of the need for early reporting of natural regeneration is found in Section 3.0 "Maintenance of Productivity".

RECOMMENDATION: That the Company should report areas prescribed for natural regeneration annually and thereafter follow the procedures for stocking and FTG assessments outlined in the Ground Rules.

In the new TMP for the third five year period of the FMA, the Company is committed to reporting natural regeneration at the time of harvest based on the silvicultural prescriptions in the Ground Rules. This will improve the ratio of actual regeneration to planned regeneration and to harvest area at the time of the next FMA review.

2.2.3 CONFORMITY OF INVOICING WITH THE GROUND RULES

Company invoicing procedures were found to be in conformity with those specified in the Ground Rules. The project area for silvicultural invoices is not pre-approved and some invoices have been returned to the Company for clarification or adjustment, prior to making payment.

2.2.4 PREPARATION OF NEW GROUND RULES

The new Ground Rules for the next five year period have been prepared and agreed to with the exception of one clause at the time of the review. The new Ground Rules as drafted incorporate a definition of a new mixed wood working group and more consistent reporting and tracking of areas for natural regeneration.

2.3 HARVEST LEVELS, MAXIMUM ALLOWABLE DEPLETION, YIELDS AND WOOD FLOW

According to paragraph 20(1) of the Agreement, the Company has agreed to maintain its harvest on the Spruce River Forest at a level between 90 percent and 110 percent of the adjusted maximum allowable depletion (MAD) for each working group. Using paragraph 20(2) of the Agreement, the Company may request the Ministry to authorize variations to the levels specified in the Agreement.

Paragraphs 20(3) and 20(4) of the Agreement provide for a rectification by the Agreement holder of any overcut, or liquidated damages, to be paid by the Agreement holder, in the event of an under-cut on the Agreement area in a specified five-year period. The Agreement holder may avoid liquidated damages through the declaration of timber surplus (paragraph 20(5)) to its needs in an approved Management Plan.

Table 2 shows a comparison of planned to actual depletions by area. The harvest of 37,355 hectares is the total logged by five companies operating on the FMA. The volume produced totalled 4.1 million cubic meters of which Abitibi-Price and Northern Wood Preservers respectively produced 41.6% and 41.7%. Approximately 1.7 million cubic meters of the total was delivered to the three Abitibi-Price mills in Thunder Bay. In addition non-FMA sources delivered 2.7 million cubic meters to the Abitibi-Price mills, for a total of 4.4 million cubic meters (approximately 87% of the planned volume). Non-FMA deliveries included 1.7 million cubic meters of roundwood from 20 different companies and 1.0 million cubic meters of wood chips from nine companies. A portion of the wood chips originated from timber produced on the Spruce River Forest.

The closure of MacMillan Bloedel's waferboard plant in 1988 resulted in the harvest in the poplar working group being only 55% of the plan.

Almost all of the allowable depletion of the white birch working group was declared surplus. Unexpectedly 54% of the white birch was marketed and this created a theoretical overcut of 400% in the birch working group.

In order to allow for the salvage of budworm damaged balsam fir from both the FMA and purchased wood areas, the Abitibi-Price mills reduced the consumption of jackpine during the 1986-91 period. Market-related and labour problems during 1990 resulted in a substantial undercut in the softwood working groups. Relief from liquidated damages with respect to the undercut of jack pine was granted by the Minister in 1989. The undercut of the spruce, balsam fir, and poplar working groups over the past five years was caused by circumstances beyond the control of the Company. The Company should have requested an undercut variation as specified in the Agreement (paragraph 20(2)).

RECOMMENDATION: That in the event the Company should forecast depletion levels during the third five year period to fall below the 90% level stated in the current TMP, the Company should take Immediate action to request, with reasonable explanation, an undercut variation from the Ministry and to amend the TMP with a surplus declaration.

The Company's strategies for sourcing wood for its Thunder Bay mills and the area sawmills have produced a complex but mutually beneficial pattern of wood flows. The Company and the Ministry should continue to plan toward best end-use forest management and the diversification of the local forest industries.

Company yield data showed a decline in the net merchantable volume per hectare from 165 cubic meters per hectare in the 1981-86 period to 105 cubic meters per hectare in the 1986-91 period. This compared to a 1986-91 forecast yield of 92 cubic meters and a 1991-96 forecast yield of 99 cubic meters per hectare. The difference in forecast to actual in the 1986-91 period is due in part to the Company's efforts to salvage budworm damaged timber.

TABLE 2
Depletion of Agreement Area for 1986-1991
(hectares)

FMA 500700
Spruce River Forest
Abitibi-Price Inc.

Working Group	Maximum Allowable Depletion	Reserves	Declared Surplus	Adjusted MAD	Harvest	Bypass	Natural Depletion	Actual Depletion
Spruce 1	11,685	364	0	11,321	10,582	280	1,399	12,345
Spruce 2	7,445	109	0	7,336	5,341	0	57	5,507
Fir	5,290	212	0	5,078	4,732	669	0	4,944
Jack Pine 1	4,810	134	0	4,676	3,594	0	0	3,728
Jack Pine 2	7,940	247	0	7,693	6,315	28	282	6,844
Poplar 2	8,275	130	0	8,145	4,629	162	113	4,872
Birch 2	7,130	191	6,145	794	3,301	0	270	3,762
TOTAL	52,575	1,387	6,145	45,043	38,494	1,139	2,121	42,002

(1) Adjusted MAD = MAD - (Reserves + Surplus)

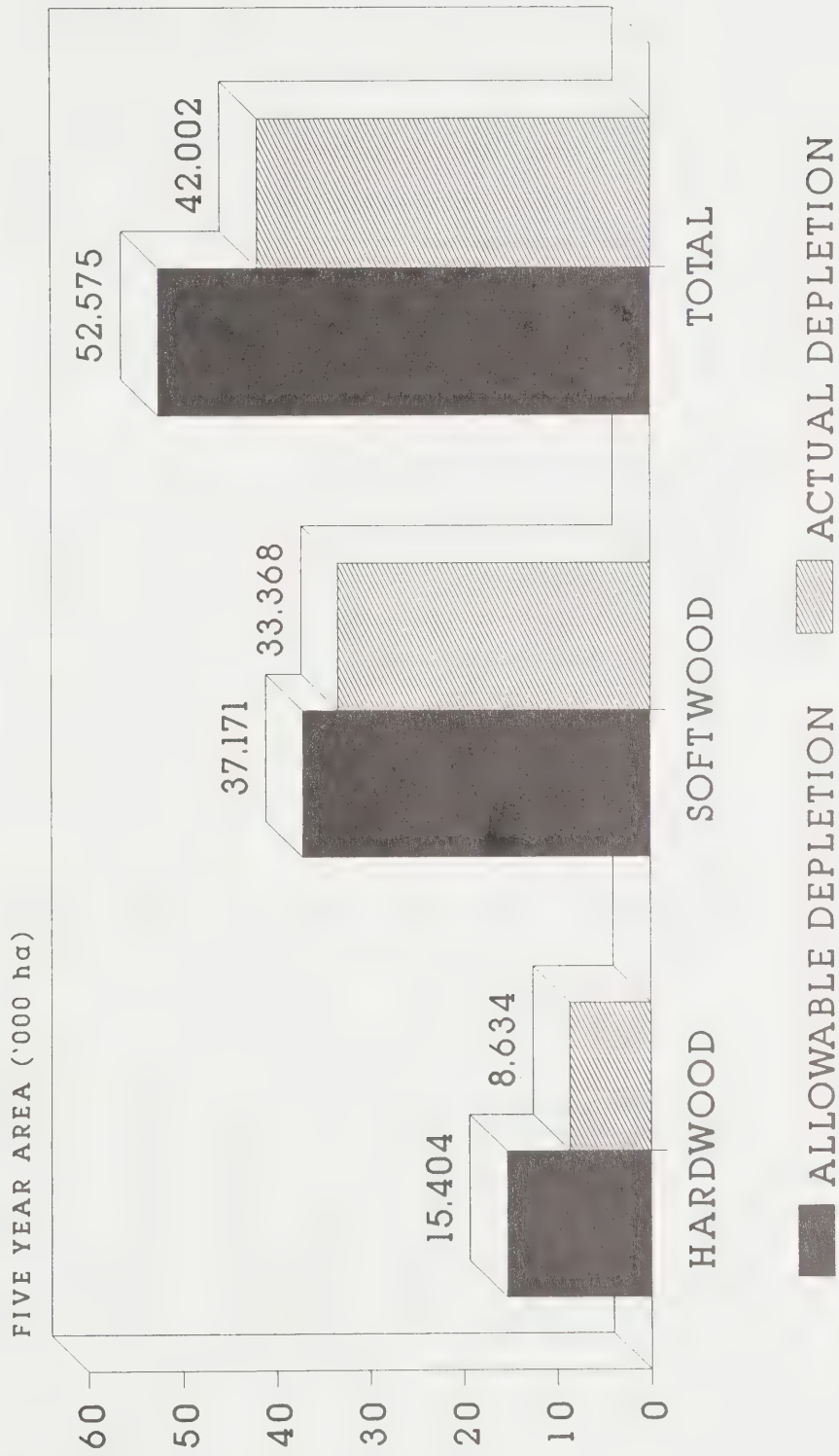
(2) Harvest = Gross Area Harvested including Bypass

(3) Actual Depletion = Harvest + Reserves + Natural Depletion

Note: Figures represent 4 years actual data and final year estimated data

Source: 1986-91 Operating Plan, Annual Reports Table 6.1, 5th year Table 6.2

FIGURE 2: COMPARISON OF 1986-1991
ALLOWABLE VS. ACTUAL DEPLETION
FMA 500700 SPRUCE RIVER FOREST



2.4 RELATIONSHIP BETWEEN HARVEST AND GROWTH AND FREE TO GROW ASSESSMENTS

Free to Grow (FTG) assessments of treated and untreated areas of regeneration serve two important functions on the Spruce River Forest. Firstly, it is the ultimate measure of regeneration success and secondly, they provide the entry point for regenerated stands into the Forest Resource Inventory (FRI) data base. In the period under review, the Company submitted 9,747 hectares to the Ministry for FTG approval. The Ministry actually approved a total of 20,537 hectares, 3,696 hectares of treated area and 16,841 hectares of untreated area (14,781 hectares of the untreated area resulted from the 1980 Fire #46). These figures represent the only approved FTG areas in the first ten years of the Agreement and contain only 5,756 hectares of regenerated cutover compared to the 62,130 hectares harvested in the period.

The Committee's concern over this matter has been relieved by changes in the 1991-96 TMP and Ground Rules which provide a basis to resolve this problem in the next five years.

A new mixed wood working group with a minimum stocking of 50 per cent to acceptable species (spruce, jack pine, balsam fir, poplar, birch, cedar) has been agreed upon in the new Ground Rules. This is an important classification in the Spruce River Forest where so much of the natural regeneration can be well stocked to a mixture of species but not meet the FTG standards for the single species working groups. The mixed wood classification would also reduce tending requirements and is compatible with wildlife prescriptions. The Company and the Ministry are commended for their initiative in developing a new working group.

FTG standards will have to be revised or an agreement reached between the Company and the Ministry in order for stands in the mixed wood working group to be approved as FTG and officially eligible to be entered into the forest inventory.

RECOMMENDATION: That the Ministry make the necessary changes to the FTG standards in order that FTG approval can be given to acceptable stands in the new mixed wood working group.

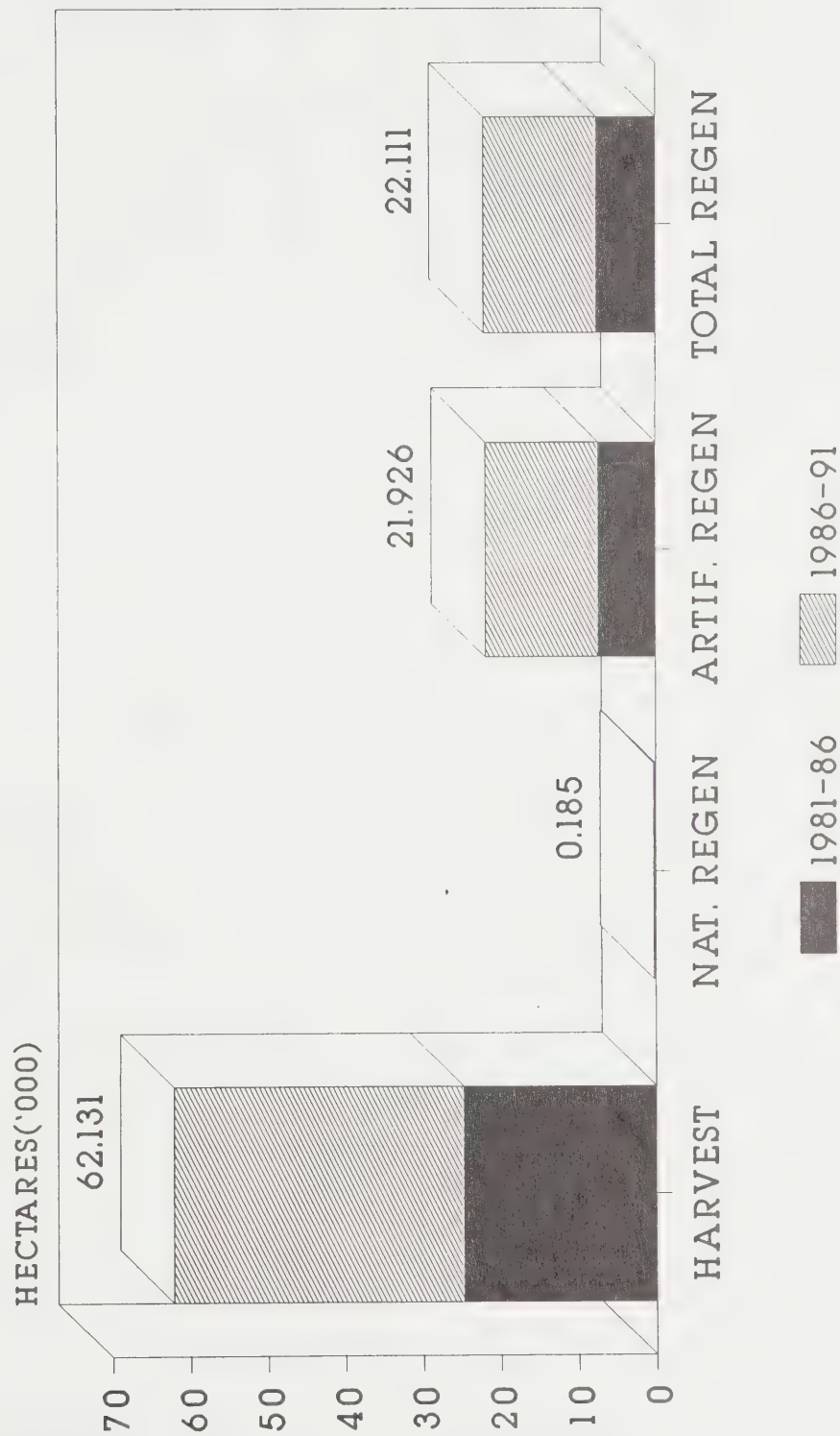
Resolution of this matter will satisfy the requirements of the Recommendation made in the 1981-86 Five-Year Review, *"that the Company and the Ministry negotiate and develop an agreement on the definition of free-to-grow"*, by providing a definition of FTG that will accept mixed stands which cannot be economically converted to another working group.

The Company has established an objective of 120,000 hectares of FTG surveys in the 1991-96 TMP. Ultimately the annual FTG objective should be equivalent to the annual depletion.

2.5 NSR OBLIGATIONS

Of the original commitment to treat 18,276 hectares of Not Satisfactorily Regenerated (NSR) Class 2 and 3 lands over 20 years, the Company completed 7,048 hectares in the 1981-86 period, and 3,289 hectares in the period under review. The total of 10,337 hectares exceeds the required 9,138

FIGURE 3: 1981-1991
HARVEST AND REGENERATION
FMA 500700 SPRUCE RIVER FOREST



hectares (50% in the first ten years). The scarcity of NSR 3 area has prompted the Company to volunteer to treat NSR 4 if necessary to complete its obligation.

RECOMMENDATION: That the Ministry and the Company set a priority on the completion of the NSR exercise outlined in the 1991-96 TMP in order that the Company's NSR obligation can be terminated at the end of that period.

Regeneration survey programs have been carried out during the last two plan periods by Abitibi-Price at its own expense. Approximately 90% of the NSR 3 and 4 has been surveyed and 80% of that was found to be satisfactorily regenerated or is standing timber. The recently completed Forest Resource Inventory (FRI) confirms this in a majority of cases. The remaining NSR area is now classified as "barren and scattered" (B&S). The 1991-96 TMP includes a commitment by the Ministry and the Company to jointly review the former NSR areas and re-classify them, where mutually agreeable, as new FRI stands. A strategy for dealing with the B&S stands is included in Section 4.8 of the Plan. It is expected that completion of this exercise will show that the original NSR obligation has been met with the possible exception of minor areas of B&S that may be treated, if economically feasible, by the Company.

2.6 ROAD CONSTRUCTION AND MAINTENANCE

Paragraph 31 of the Agreement provides for the Ministry to reimburse the Company, subject to a maximum amount per kilometre, for construction, reconstruction and maintenance of forest access roads on the Agreement area. To be eligible for payment, roads must be detailed in an AWS and constructed according to "Schedule E" of the Agreement.

In the Spruce River Forest primary access is provided by three major all-weather roads. The Spruce River Road (Highway # 527) runs through the southern half of the area, connecting Highways #11 and #17 in the south with the community of Armstrong in the north. The Garden Lake Road (Highway #811) bisects the north-central portion of the forest. The Graham Road runs north from Highway #17 at the community of Graham and bisects the western arm of the Spruce River Forest.

The Spruce River Forest is well serviced by a network of primary and secondary forest access roads. During the ten years of this FMA (1981-1991), road funding provided for a total of 755.5 kilometres of new or reconstructed roads; 12% (90.2 kilometres) were primary roads. According to the Company, most of the oldest timber in the Spruce River Forest is accessed by primary roads. Primary road construction doubled in 1986-1991 compared with the first five years of the FMA (60.6 kilometres vs. 29.6 kilometres) but was only 85% of the level planned. The shortfall in primary road construction reflected the incomplete construction of the North Road in the extreme northern portion of the forest. Funding permitted the addition of primary access in the western and south-central portions of the forest.

Construction of secondary roads declined to 39% of the level achieved in the first five years of the FMA (186.7 kilometres vs. 478.6 kilometres). Compared to primary roads, a smaller proportion of the planned secondary roads was funded (61%). Secondary roads which were planned but not funded were predominantly located in the western section and in the extreme north of the Spruce River

Forest. The Company built 99 kilometres of these roads at their own expense. Two third parties built 26% of the funded roads. Third parties built only 55% of the roads which they had proposed (primary and secondary combined) in the Operating Plan, while the Company constructed 72%, for an overall level of achievement of 62% (Figure 1). About 8% of the planned primary and secondary roads were not built because they would not have provided access to timber allocated for harvest in 1986-1991. However, most of the shortfall reflected funding cuts to the FMA road program.

The extensive network of Company and FMA roads helped to disperse the cut over the Spruce River Forest and to reach stands damaged by the spruce budworm. One of the main objectives of FMA road funding was to create access to the oldest stands of timber. In the Spruce River Forest, approximately 28% of the spruce working group is in the 120+ age class; 54% of the spruce stands harvested during 1986-1991 were of that age.

For the Operating Plan, roads were initially located by using photo interpretation. By overlaying maps (scale 1:15,840), the Committee noted deviations of 400-900 meters between the planned (Operating Plan) and final locations of several third party and Company roads built during 1986-1991. It is important that roads are located as accurately as possible in the Operating Plan or TMP since these plans are used for public reviews. The "corridor" approach to road planning which was used in the new TMP should help to alleviate the problem of having to submit amendments for every small change in the location of a road.

In the Spruce River Forest, roads are built by the Company and third party operators in their respective areas of operation. Both groups operated throughout the FMA area. Before the submission of invoices in 1986-1991, representatives of the Ministry and the Companies inspected the quality and length of roads eligible for FMA funding. This resulted in deficiencies being corrected before the official submission of invoices. During the field inspections, the Committee observed that roads were maintained well. Roads invoiced for maintenance were graded and culverts were repaired as required.

2.7 COMPANY RECORDS

Portable, computerized dataloggers are used to collect information in the field and transfer it directly into the Company's Geographic Information System (GIS). The GIS produces coloured maps in the scale required by the Ministry for plans (1:15,840) and a smaller scale (1:66,667). Company maps show residual stands as small as one hectare although the TMP Manual does not require the reporting of residuals less than eight hectares. The GIS can also be used to calculate areas and produce tables for reports.

Theoretically, harvesting and renewal operations on the same piece of ground can be traced easily with the GIS. However, the Company's present system is slow because of the vast data set already stored. The labour-intensive process of digitizing data on old projects is still under way. Thus, Company staff regularly refer to paper files and standard project maps for information. In the files, each project is given a unique three-part number including the base map and the year. Files are colour-coded by year and type of project (e.g., site preparation, planting). Each contains a Ministry long form SIS card and the projects are cross-referenced to others in the same area. Without the GIS, operations on the same piece of ground must be traced using a cumbersome process of

overlaying several depletion and silviculture maps. At present all silvicultural information for the ten years under the FMA is in the GIS. Stocking and survival data is available for the last two years; previous data is in paper files.

2.8 ANNUAL REPORTS

Annual Reports consisted of tables, no written report was made. The Ground Rules of the Agreement (Section 13 of Schedule C) stipulate that details of substantial undercutting or overcutting should be provided in the Annual Report. However, this was not done.

Reports were submitted on time except for the depletion report for 1989-1990 which was submitted 1-1/2 months late on the approved extension date of January 1, 1991. With their reports the Company included a covering letter which served as a permanent record of the submission date.

Accuracy in Annual Reports is essential because a variety of documents are generated from their contents. For 1990-1991 the Ministry prepared a written review of the Company's Annual Report after having checked the annual and five year figures against their own records. Despite this checking a few errors were missed. Discussion with both Company and Ministry staff revealed that prior to 1990 there was no formal review of the reports and no official notice from the Ministry that the reports had been checked and approved. The Committee noted that the informal procedures used to verify past Annual Reports resulted in errors which were not detected until months after the reports were originally submitted, and presumably after the reports were officially tabled in the Legislature. It was very difficult for the Committee to track the changes which had been made because the method used to correct errors was inconsistent. Reports were either totally revised and re-issued or errors were corrected in subsequent Annual Reports without explanation. The Committee believes that Annual Reports should remain unchanged once they have been formally checked and approved by the Ministry, and that explanatory footnotes should be used to make the necessary changes in subsequent Annual Reports.

RECOMMENDATION: That Annual Reports contain a descriptive section summarizing the year's highlights including an explanation for major deviations from target levels of achievement in harvesting and silviculture, amendments, and other significant events. In addition, that the Ministry check carefully the contents of the Annual Reports against their own records and formally acknowledge the approval of Annual Reports for completeness and accuracy.

2.9 INTEGRATION WITH OTHER FOREST USES

Section 11 of the Ground Rules of the Agreement, entitled Integration of Other Resource Values in Timber Management, explains how the Company and the Ministry will manage certain lands, designated as Areas of Concern (AOCs), for uses other than or in addition to timber production.

For 1986-1991, AOCs were marked on maps which accompanied the Operating Plan and the AWSs but there was no information on the specific functions of the AOCs. The TMP for 1991-1996 contains

much more detail. In it the Company and the Ministry identified about 500 AOCs, some designed to protect eagle and osprey nests, heronries, cottages, canoe routes, and habitat for moose, caribou and furbearers. Input from the general public was also solicited.

Aerial inspection by the Committee revealed that virtually all lakes and streams in the vicinity of harvesting operations in 1986-1991 were encircled by full reserves. The Committee recognizes that this will maintain water quality and provide habitat for wildlife requiring mature (but not immature) riparian forest. However, the Committee encourages the Ministry and the Company to devise more creative treatments around water bodies, where permitted by the Timber Management Guidelines for the Protection of Fish Habitat, to provide a greater diversity of wildlife habitat and to simulate better the variability in shorelines caused by natural wildfire.

Abitibi-Price showed commendable regard for reserves; no trespass charges were levied by the Ministry. However, third parties were not as careful, possibly because of poor supervision in the field and the lack of detail in the Operating Plan on the function of specific reserves (see above). One third party was charged three times for cutting in reserves; another was charged once. There were numerous warnings for other unauthorized cutting outside reserves.

RECOMMENDATION: That the Ministry and the Company ensure that third parties are aware of the location and objective of reserves. Third parties must work to minimize the breaching of reserves.

In 1986-1990, water crossings were marked on maps and specifications were left up to the Company, except where the Ministry noted special restrictions on the work permits or cutting permits for road rights-of-way. On field inspections, the Committee observed that although most culvert installations allowed unimpeded movement of water and fish, some culverts were set a bit too high or were too small in diameter to handle periodic heavy flow, particularly on some of the older crossings. Upstream flooding appeared to result in some cases. The AWS for 1990-1991 included a water crossing summary form which specified the size and number of culverts to be used based on drainage calculations. The Committee was impressed with many of these new crossings and commends the Company for their efforts in this regard. One third party bridge was very impressive.

Clear cut size is an important wildlife consideration. Field inspections by the Committee showed that some of the older cuts were very large (several hundred hectares) but that wildlife corridors helped greatly to break them up. The Committee commends the Company and the Ministry for modifying the cuts in this way before they were required to apply the Timber Management Guidelines for the Provision of Moose Habitat. Recent cuts tended to be smaller, more in line with the guidelines, and showed more variety in size and shape and in the methods used to reduce their effective size. According to the Ministry biologist, the FMA area has been stratified to reflect its inherent potential for moose, and thus, larger cuts are permitted in the north. Many of the cuts contain snags which will benefit cavity-nesting wildlife, but those where heavy site preparation was used generally lack sufficient snags. The Committee encourages the Company to leave unmerchantable live and dead trees standing on the cutovers wherever possible.

The Company has a pro-active attitude toward other forest users, maintains an open-door policy, and handles most public concerns itself. To ensure that other users had an opportunity to comment on the many proposed amendments to the Operating Plan, the Company and the Ministry used public

notices as well as personal notices to all individuals who might be affected by the changes. Also, the Company invited trappers and outfitters to discuss forest tending plans for their areas. The Company is proud of its achievements in forest management and has erected signs for public information. Company staff speak to community groups and give tours of their operations on request.

The Company and the Ministry co-operated extremely well together regarding forestry and other user or wildlife problems and have made reasonable concessions which allowed both parties to achieve their objectives. For example, through an amendment a proposed wildlife corridor was moved on the request of the Company once the Ministry determined that the new location would be equally beneficial to wildlife. In another corridor, a third party was permitted to cut poplar selectively for veneer; there was minimal disturbance after the logging. In another case the Company (at the request of the Ministry) left 30 meters of unsprayed buffers around the edges of a herbicide treatment area to provide moose browse. The Company has reported osprey nests to the Ministry even though this meant that restrictions on cutting or silvicultural work in the area would be enforced. Company staff have participated with the Ministry in special wildlife and integrated resource management (IRM) projects (e.g., field trials of herbicides on habitat of small mammals, review of caribou guidelines, IRM training video).

Access roads open up the forest for the general enjoyment of the public and are essential for timber extraction and later renewal work. However, roads have the potential to compromise the remoteness of outpost camps. During the period under review, permanent access roads were not allowed within one kilometre of certain lakes; only winter or tertiary roads were permitted. In other areas, gates and ditching were tried but the Company, the Ministry, and the outfitters involved concluded that road signs effectively restricted access to designated lakes without seriously reducing the accessibility of the forest.

3. MAINTENANCE OF PRODUCTIVITY

During the five year term under review, as shown in Table 2, the actual depletion was 80% of the MAD, which is well within the limits of sustained yield management. During the first ten years of the FMA, an area equivalent to 36% of the harvest was recorded as regenerated. When broken down into five year periods the corresponding figures are 30% for the 1981-86 period and 39% for the 1986-91 period. In view of the constraints on funding of artificial regeneration and the limited supply of planting stock, further advances in the level of regeneration may have to come from an increase in natural regeneration. In fact by reviewing the Fifth Year Stocking Reports and relating these to areas of natural regeneration observed during the site visits, the Committee confirmed that a large proportion of the older untreated cutover is adequately stocked and will soon meet FTG standards. This suggests that there may be a backlog of such areas yet to be added to the records.

To date, FMA companies have been reluctant to include natural regeneration targets in their plans and reports for two main reasons. Firstly, the procedures for recording and assessing regeneration were designed to accommodate artificial treatments and as such are not suitable for natural regeneration in all cases. Secondly, "regeneration" has implicitly been interpreted as synonymous with "renewal" when trying to arrive at a balance between extraction and re-establishment. For natural regeneration, adequate stocking and FTG conditions occur somewhat later than in plantations. Therefore, untreated areas often do not pass the tests applied to artificially treated areas

and are excluded as unsatisfactory even though at a future maturity they may match the yields of the prior harvest.

On the Spruce River Forest, as noted in Section 2.4 "Relationship between Harvest and Growth and Free to Grow Assessments", a total of 20,537 hectares or an annual average of 4,100 hectares for the five year period, were approved to be entered into the data base. To maintain the productive potential of the unit the area approved as FTG per annum should be approximately equivalent to the average annual depletion. A reduction in productive area will have to be compensated by an increase in yield per hectare at the next harvest. Since it is known that the land base is being continually reduced by "no-cut" reserves, inoperable areas, areas which are unmerchantable and are bypassed, and long term deletions such as roads and landings, it is clear that maintaining timber productivity for future harvests is dependent on achieving higher average yields. The majority of the plantations inspected by the Committee in the Spruce River Forest show a level of stocking, health, and growth that would produce such a result. Data collected from plantation survival plots confirm that, six growing seasons after planting, seedling survival is 85% or higher and 80% of the seedlings are in the healthy to vigorous classes. Four years after planting mean height is one meter and root collar diameter is one to one and a half centimetres. Naturally regenerated areas could be expected to produce yields at least as good as the prior harvest.

The Committee compliments the Company for its success in producing high quality plantations, its decision to expand its efforts to manage for natural regeneration (refer to Section 2.2.2 "Conformity of Harvest and Silvicultural Operations with the Ground Rules"), and its continuing attention to the objective of maintaining the productivity of the land base.

RECOMMENDATION: That, in view of the constraints to a further expansion of the artificial regeneration program, the Company and the Ministry proceed to develop a comprehensive natural regeneration strategy in order to maintain the long term productivity of the Spruce River Forest.

As required by the Ground Rules (section 4.2.6), the Company has participated in the identification and assessment of areas damaged by insects. Moreover, the Company attempts to keep spraying to a minimum by harvesting affected stands before extensive mortality occurs.

4. IMPLEMENTATION OF THE RECOMMENDATIONS OF THE FIRST FIVE-YEAR REVIEW

The recommendations resulting from the first five-year review of operations of the Company in the Spruce River Forest have all been addressed, however not all of the problems and concerns that led to the recommendations have been completely resolved. The Committee urges the Ministry and the Company to continue to work together to ensure that these matters are resolved.

The recommendations from the first five-year review and the status of their implementation is as follows:

That the Abitibi-Price Inc. Spruce River Forest FMA (#500700) be extended for a further five-year period.

The FMA has been extended.

That the Ministry communicate and discuss with the Company the principles of Integrated Resource Management in order that the staff of the Company develop a better understanding of, and an increased commitment to, those principles.

After discussions with Company and Ministry staff, the Committee concluded that the Company is co-operating well with the Ministry as it works toward IRM. Ministry staff have spoken to harvesting crews about IRM in general and the moose and water crossing guidelines specifically. The Company has participated in a number of IRM workshops and training sessions and maintains an open-door policy for other forest users.

That the Ministry withdraw the requirement that the Company complete MNR SIS cards.

The requirement has not been withdrawn but the Company submits SIS cards with basic information annually. The Company maintains detailed records as part of their GIS from which the Ministry can request information for specific needs.

That the Company and the Ministry work towards properly classifying those uncut portions of the allocations as bypass, untreatable, etc., in order to prevent problems in the future.

The Company and the Ministry have agreed on a classification for uncut portions of the stand and the Company has submitted information. However no areas have been declared non-treatable by the Company.

That the Ministry review its tree contracting program with the objective of improving the quality and ensuring the quantity of the stock produced.

Such a review should include:

- *an examination of the current stock standards;*
- *the issue of producing two crops per year as compared to one overwintered crop;*
- *the need to provide more technical expertise to contract tree growers and additional monitoring during the growing season;*
- *a consideration of the feasibility of giving the Company responsibility for supplying its own nursery stock, with the Ministry paying the normal production costs and the Company entering into its own contracts with private growers.*

The Company has been growing its own planting stock under contract with private growers since 1988. The Company has expressed satisfaction with that arrangement.

That the Company and the Ministry amend Schedule "B" to recognize those lands which have changed NSR class since the original survey.

The matter has not been completely resolved but agreement between the Company and the Ministry has been reached on several key issues. Details are given in Section 2.5 "N.S.R. Obligations".

That the Company and the Ministry negotiate and develop an agreement on the definition of free-to-grow.

This has been partially done through agreement reached in the preparation of the Ground Rules for the 1991-96 TMP in establishing a mixed wood working group. The mechanics for the Ministry to approve acceptably stocked mixed wood stands as FTG have yet to be developed and agreed to by both parties.

That the Ministry develop a more effective process for review and approval of Company Annual Plans.

Some improvements have been noted but negotiations are continuing and should be completed by December 1991.

That the Ministry staff notify the Company of the Company's allocation of FMA funds in a more timely manner.

There has been some improvement in the date of funding approval but the matter is tied to Government funding procedures and is beyond Ministry control.

That the Ministry examine, in co-operation with the Companies, the possibility of establishing a more structured forum (workshops, seminars) for the exchange of information between companies and the Ministry. Such a forum would be of benefit to both Company and Ministry staff.

The Company and the Ministry share seminars and training courses on a regular basis. Structured forums for the exchange of information have been organized by the Northwestern Ontario Forest Technology Development Unit. Company and Ministry staff are pleased with the results.

That the Company and Ministry examine treated and non-treated areas in the FMA area and determine whether to treat or not to treat.

Basic issues have been agreed to in the 1991-96 Ground Rules but the FTG standards require amendments to accommodate the mixed wood working group.

That the Ministry continue to assess the most effective and efficient methods of carrying out forest pest control.

At present spruce budworm is the principal forest insect problem in the Spruce River Forest and although the Company participates in the annual Pest Review process they are not confident of the Ministry's ability to act decisively in a crisis situation.

5. COMPANY FOREST MANAGEMENT ACTIVITIES CONDUCTED BEYOND THE OBLIGATIONS UNDER THE AGREEMENT

The Company has been active in Forestry and related disciplines in the Thunder Bay area for many years. Some of their achievements and recent activities are listed here.

The Company has worked with a local contractor to develop a pneumatic seeder using a three row Bracke Scarifier with compacting units. Seeding success with this unit has been linked to precise control of travel speed.

The Company has kept aerial spraying for Spruce Budworm control and volume loss to a minimum with its co-ordination of harvesting operations and pesticide use in salvaging budworm damaged stands.

The Company has placed a high priority on planting quality and has confirmed fifth year survival of 85% and mean height of one metre after four years in plantations. In addition the Company has been contracting their own planting stock production to Company specifications since 1988.

The Company is a founding member of the Ontario Tree Improvement Council (OTIC), co-operating in the establishment of black spruce and jack pine seedling orchards in the Lake Nipigon West breeding zone. The Company is responsible for a black spruce seed orchard on a freehold block and one pine and two black spruce family trials on FMA and freehold lands.

The Company was the first company in Ontario to purchase a Geographic Information System (GIS). The GIS system purchased in 1986 has been operational since 1988 and is now fully operational for forest management activities.

In research, the Company has co-operative projects with a variety of agencies dealing with professional seminars and workshops, pulping research, and Lakehead University projects, and in field trials for nursery stock outplanting and seeding with the Ministry's Northwestern Ontario Forest Technology Development Unit, Lakehead University, the Canadian Forestry Service, and herbicide manufacturers.

In public relations activities the Company has adopted a formal policy toward staff training and public communications activities including a signing policy, speaking engagements, tours, media presentations and a one-on-one open door policy with interest groups and other users of the FMA.

The Company was instrumental with the Ministry and other companies in developing the video "Integrating Wildlife and Timber Management", which is being used to train Ministry and Industry staff.

At the request of the Company, Ministry biologists have addressed Company harvesting crews on the subject of Integrated Resource Management. Progress in this respect is exemplified by the fact that 22% of the allocations in the 1991-96 TMP are reserved or deferred for other uses.

6. STAKEHOLDER CONCERNS

6.1 PUBLIC CONCERNS

On April 8, 1991 a Public Concern Meeting was held in Thunder Bay. The review co-ordinator, John M. Duncanson chaired the meeting. Approximately 400 Notices were sent out prior to the meeting to various interested parties as well as published in the local newspapers. Approximately 20 people attended the meeting.

Following a description of the FMA review process by the chairman, the floor was opened to discussion and expression of concerns.

There were three concerns presented regarding the operations of Abitibi-Price on the Spruce River Forest. (Public Stakeholder concerns were addressed and the Review Committee comments are in italics).

- i) A cottager expressed concern about timber utilization in the vicinity of Mawn Lake and the lack of collecting and burning of slash.

At the invitation of Abitibi-Price the cottager visited the Company's Woodland offices on April 28, 1991 to discuss his concerns. The Company subsequently advised that the cottagers concerns had been answered.

- ii) A local hunter from Thunder Bay who owned a hunting camp on the Dog River was concerned that the Company was cutting too close to the cabin, the Company was removing too much wood from the area, and, that when the gate on the Dog River road was removed, access to the area would increase.

The concerned person participated in the planning process for the 1991-2011 Spruce River TMP. As a result of his input and wildlife values in the area, a 120 meter buffer of the Dog River was carried forward from the 1986-2006 Plan. There is an 800 meter buffer between the cabin in question and proposed harvest area. The Company has recommended to the Ministry that access restriction be extended following harvesting for wildlife concerns.

The Committee flew over the camp in question during the field visit and verified that it was indeed protected by a substantial reserve from the harvested area.

- iii) A recreationalist from Thunder Bay asked if the Company intended to upgrade the roads in the Chisamore Lake area.

The Company responded that it will be maintaining the Chisamore Road when it plans access to proposed allocations northwest of Chisamore Lake.

6.2 COMPANY CONCERNS

On June 10, 1991 the Review Committee met with Company officials to discuss their concerns regarding the management of the Spruce River Forest. The Company provided a list of their concerns and comments in writing. The following are the Company's concerns;

- i) The Company is concerned about "significant erosion" in their feeling of secure tenure as it relates to the Spruce River FMA and the Company's faith in the Government's intent to honour its side of the contract, namely;
 - Ministry statements which either state or imply that FMAs may be replaced with other forms of tenure,
 - the 1991 chemical tending program has been restricted by withholding of funding.The company is concerned that past renewal efforts are at risk and reducing the future value of past investments.

- ii) The 1986-91 approved Five Year Operating Plan, table 5-7, detailed the level of silviculture to be carried out during the period. Tree planting was to have been 21.433 million trees. In fact 21.212 million trees were approved in the AWSs and 19.368 million were planted. Shortfalls were the combined result of caps imposed on funding by the Ministry and losses of, or substandard stock, at the greenhouses due to inadequate growing regimes and disease.

Growers for both the Ministry and industry seem unable to date to anticipate losses and adjust seeding levels to accommodate the losses and guarantee target delivery. The Company feels there is room for a 5-10% tolerance by the Ministry on each year's plant level (i.e. if any year results in a tree shortage the following year should be allowed a 10% increase in approval numbers to make up the losses).

- iii) The Company is frustrated with difficulties experienced by the Ministry in transferring money within the annual budget to fund necessary, or desirable, work when circumstances prevent planned programs from being completed or carried out. At best long delays occur resulting in operational inefficiencies.
- iv) There have been instances when the Ministry has carried out cut or culvert inspections without advance communication and mutual inspection. In two instances the lack of communication with the Company has resulted in misinformation and unnecessary animosity. This has definitely not been the rule, but repeat occurrences could raise the Company's level of concern. The Company perceives that such instances are the result of frequent changes of Ministry staff and inexperienced staff.

6.3 MINISTRY CONCERNS

On June 13, 1991 the Review Committee met with Ministry staff to discuss their concerns regarding the management of the Spruce River Forest. The Ministry provided a list of their concerns and comments in writing. The following are the Ministry's concerns;

- i) The local Ministry staff are concerned that the tracking of the NSR commitment on the Spruce River FMA is presently not actively being pursued by the Company or the Ministry. The Company has requested that the existing commitment be dropped. Tracking of NSR has become extremely difficult since the inventory has been updated to Ontario Base Map (OBM) format from Forest Resources Inventory format.
- ii) Free to Grow - The first block of FTG was approved in the winter of 1991, 10 years after the start of the FMA. There have been several attempts and false starts however a useable program is now in place. Some of the problems associated with this program were the inventory update to OBM format from FRI format, the changing standards in the Schedule C of the FMA Ground Rules, and the lack of direction in this program area.
- iii) The withdrawal process has not been well maintained over the term of the FMA. As this is now being layered on the Company's GIS tracking should be much easier. One area of discussion to date has revolved around the Mining withdrawal on the FMA. No location has been attached to this withdrawal to date yet considerable activity has occurred at the Lac des Illes site.

7. CONCLUSIONS AND RECOMMENDATIONS

The Committee is satisfied that the obligations of the Company under the Agreement have been satisfactorily performed by the Company during the five year term under review.

The cornerstone of the Company renewal program has been to plant and tend black spruce on the better sites closer to the mill and to seed jack pine in the more remote areas of the FMA. Both of these programs have been well executed and as a result the FMA has some excellent FTG spruce plantations and young pine stands. The Company may in some instances be over zealous in its pursuit of spruce plantations on sites with heavy competition from jack pine and poplar. These pursuits have resulted in the loss of plantations and increased tending costs. Acknowledgement of this problem and careful choice of silvicultural prescriptions designed to regenerate with the species best suited to the site will ensure cost effective regeneration.

In the first ten years of the Agreement an area equal to 70% of the harvest area has been left for natural regeneration. The Company has been negligent in not planning and reporting these areas left for natural regeneration. A dramatic improvement is required in the next five year period. The new Ground Rules address this issue, to secure and document the natural regeneration potential found on the FMA.

In another reporting responsibility the Company did not report accrued wood surplus in spruce, balsam fir, and poplar due to reduced volume required by Company and third party mills. The Committee recognizes the difficulty in keeping track of third party operations particularly in the final year of the Agreement, and the slow and laborious amendment procedure required to declare surplus. However, the Agreement (paragraph 20) is quite clear on the matter and the Company has not met all of its obligations in this regard to date.

The Committee is satisfied that the recommendations of the first five-year review have been adequately addressed.

The Committee was impressed with the good communication and co-operation between Ministry and Company staff regarding fish and wildlife problems and commends the Company for its attention to the concerns of other users and its early and continuing involvement in the introduction of the concept of integrated resource management.

The Company can be proud of the quality of its silvicultural operations and its efforts to inform and educate the public with respect to the forest management undertaking. The 1991-96 TMP includes proposals to update the forest data base to produce a more accurate record of the results of the renewal operations and the current status of the land base.

The recommendations that follow are intended to reinforce and support the Ministry and Company staff in their efforts to continue to fulfil the prime objectives of the FMA. As a result of its review of the Company performance in the past five years and in view of the improvements incorporated into the 1991-96 TMP, the Committee believes that these objectives will be achieved.

RECOMMENDATION No. 1: That the Minister extend the remaining period of FMA 500700 by a further term of five consecutive years to March 31, 2011.

RECOMMENDATION No. 2: That the Company manage the forest to obtain the maximum benefit from silvicultural expenditures and to produce species and products best suited to the soils and site conditions encountered.

RECOMMENDATION No. 3: That the Company should report areas prescribed for natural regeneration annually and thereafter follow the procedures for stocking and FTG assessments outlined in the Ground Rules.

RECOMMENDATION No. 4: That in the event the Company should forecast depletion levels during the third five year period to fall below the 90% level stated in the current TMP, the Company should take immediate action to request, with reasonable explanation, an undercut variation from the Ministry and to amend the TMP with a surplus declaration.

RECOMMENDATION No. 5: That the Ministry make the necessary changes to the FTG standards in order that FTG approval can be given to acceptable stands in the new mixed wood working group.

RECOMMENDATION No. 6: That the Ministry and the Company set a priority on the completion of the NSR exercise outlined in the 1991-96 TMP in order that the Company's NSR obligation can be terminated at the end of that period.

RECOMMENDATION No. 7: That Annual Reports contain a descriptive section summarizing the year's highlights including an explanation for major deviations from target levels of achievement in harvesting and silviculture, amendments, and other significant events. In addition, that the Ministry check carefully the contents of the Annual Reports against their own records and formally acknowledge the approval of Annual Reports for completeness and accuracy.

RECOMMENDATION No. 8: That the Ministry and the Company ensure that third parties are aware of the location and objective of reserves. Third parties must work to minimize the breaching of reserves.

RECOMMENDATION No. 9: That, in view of the constraints to a further expansion of the artificial regeneration program, the Company and the Ministry proceed to develop a comprehensive natural regeneration strategy in order to maintain the long term productivity of the Spruce River Forest.

8. REVIEW COMMITTEE STATEMENT

We have examined the performance of Abitibi-Price Inc. as pertaining to its obligations under the Forest Management Agreement No. 500700 (Spruce River Forest) during the past five year period ended March 31, 1991.

In our opinion, the Company has conformed to the rules as outlined in the Forest Management Agreement.

signed *The Review Committee*

The Review Committee

**SECOND FIVE-YEAR REVIEW
GREAT WEST TIMBER LIMITED**

**BLACK RIVER FOREST
FMA 500800
1986-1991**

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1. INTRODUCTION

1.1 PURPOSE OF THE REVIEW

The Ministry of Natural Resources (the "Ministry") and Great West Timber Limited (the "Company") signed a Forest Management Agreement or FMA (the "Agreement") in March, 1986. This signing transferred the Agreement, number 500800, signed April 1st 1981, designated the **BLACK RIVER FOREST**, from the Ontario Paper Company, a division of the Quebec North Shore Paper Company Limited, to Great West Timber Limited. The primary purpose of this Agreement was to provide a continuous supply of forest products for the wood processing plants of the Company at Thunder Bay, Ontario and to ensure that the Black River Forest is harvested and regenerated to produce successive crops of timber on a sustained yield basis.

A review of the first five consecutive years of the Agreement was conducted on the Black River Forest in 1986 when the Company had just become the new Agreement holder. The extension for a further five year period was delayed until March 1987 when the 1986-1991 five-year Operating Plan was approved. The current Agreement between the Ministry and the Company expires March 31st, 2006.

The review of the second five year period (1986-1991) of the Agreement was conducted on the Black River Forest to determine whether the obligations of the Company under the Agreement have been satisfactorily performed and to recommend to the Minister of Natural Resources whether the remaining period of the Agreement should be extended for a further term of five years.

1.2 THE REVIEW COMMITTEE

The review was carried out by a committee (the "Committee"), engaged by Duncanson Investment Research Inc. under contract with the Ministry. The Committee members were:

Mr. John M. Duncanson, B.Sc.F., R.P.F., Review Coordinator
- President, Duncanson Investment Research Inc.
- independent financial analyst specializing in the forest industry

Mr. Garnet W. Bell, B.Sc.F., R.P.F., Forestry Consultant, Committee Chairman
- forestry specialist - 38 years in Boreal Forest management
- Vice-President, Woodlands (Retired), Spruce Falls Power & Paper Co. Ltd.,

Ms. Kandyd Szuba, B.Sc.F., Ph.D., Private Consulting Biologist.
- wildlife specialist - 14 years researching the habitat requirements of birds and other wildlife of the Boreal Forest.

Mr. Herb Bax, B.Sc.F., R.P.F., President of KBM Forestry Consultants Inc.
- silvicultural specialist - 18 years practising forest silviculture in Northwestern and Northeastern Ontario

1.3 TASKS OF THE REVIEW COMMITTEE

The Committee's assignment was to undertake a fair and objective review of Great West Timber Ltd's performance on the Black River Forest during the second five-year term, vis-a-vis its obligations under Forest Management Agreement 500800, as specified in detail in Appendix A - "Terms of Reference for the Second Fifth-Year Review of a Forest Management Agreement", and to make recommendations to the Ministry on the extension of the Agreement's term according to the "evergreen" section of the Agreement (Section 15, Paragraph 33).

The review was conducted by:

- inspecting the depletion, silvicultural and road records for adequacy and for conformity with the management plans and ground rules of the Agreement,
- comparing the levels of harvest and treatment of not satisfactorily regenerated (NSR) lands outlined in the Annual Reports with the levels required by provisions of the Agreement,
- selecting and field inspecting harvest cuts, silvicultural projects and road construction typical of the techniques employed on the forest for conformity with the Agreement holder's records and for field applications of the ground rules,
- determining the degree to which other forest users and other forest values are accommodated in management planning and in field operations,
- meeting with Company and Ministry district staff to identify problem areas and Agreement concerns on the part of either party, and,
- meeting with other users of the forest in and adjacent to the Agreement area, i.e., local cottagers, hunting and fishing groups, native groups, and identifying with them problem areas or concerns on the part of the public with respect to the Agreement, its administration, and the working relationship with the Company and Ministry staff.
- examining and reporting upon the relationship between the harvest and growth, by applying free-to-grow (FTG) standards, including forest regeneration success that has occurred on the forest during the period,
- reviewing the recommendations of the first Five-Year Review and reporting on the status of implementation, and,
- examining and reporting if overall, the FMA objectives, to manage Crown timber on a sustained yield basis and supply the mills identified in the Agreement through the integration of harvest, renewal, and maintenance activities, are being met.

2. PROCEDURES AND FINDINGS

2.1 MANAGEMENT PLANNING

2.1.1 THE PREPARATION AND SUBMISSION OF PLANS

The Agreement requires the Company to prepare Management Plans, Operating Plans, Annual Reports, and Annual Work Schedules (AWSs).

These documents must be prepared and submitted to the Ministry according to the time frame specified in the Agreement and in accordance with the planning manuals approved by the Ministry for this purpose.

The 1986-1991 Forest Operating Plan for the Black River Forest was submitted for a fifth time on December 6, 1986, approximately six months after the due date. The plan was prepared at a time when operations were changing from a pulpwood to a sawlog requirement. Furthermore the ownership had changed twice, from the Ontario Paper Co. to Great West Timber Ltd. in February 1986 and in August 1986 Great West Timber Ltd. was acquired by Buchanan Forest Products Ltd. Great West Timber is a wholly owned subsidiary of Buchanan Forest Products Ltd. North West Timber Ltd. is contracted to carry out the forest operations on the Black River Forest. The Operating Plan was approved by the Ministry on March 31, 1987.

The five AWSs were submitted by the Company between November 29 to December 15 and approved by the Ministry between February 24 to April 8 for the five years 1986 to 1991. The 1986-87 and 1987-88 AWSs submissions and approvals were late due to the delayed submission and approval of the 1986-91 Operating Plan.

The 1991-1996 Timber Management Plan (TMP) was approved on February 27, 1991 by the Director, Forest Products and Marketing Branch of the Ministry meeting the specified dates as indicated within the Agreement. The Committee noted that the new silvicultural Ground Rules and operational prescriptions contain more detail and information that reflect the developing knowledge and experience acquired over the past ten years of silvicultural work on the Black River Forest.

2.1.2 PLAN IMPLEMENTATION

The Agreement requires that the Company conduct its operations in accordance with the approved Management and Operating Plans and AWSs.

Fluctuations in the pulpwood and lumber markets curtailed many of the Company's operations. Silvicultural operations and road construction carried out with Ministry funding are listed in Table 1. It can be seen that in spite of the volatile market the Company was able to maintain a significant portion of its planned activities (see Figure 1). This can be attributed to the diverse operations of the Company.

TABLE 1

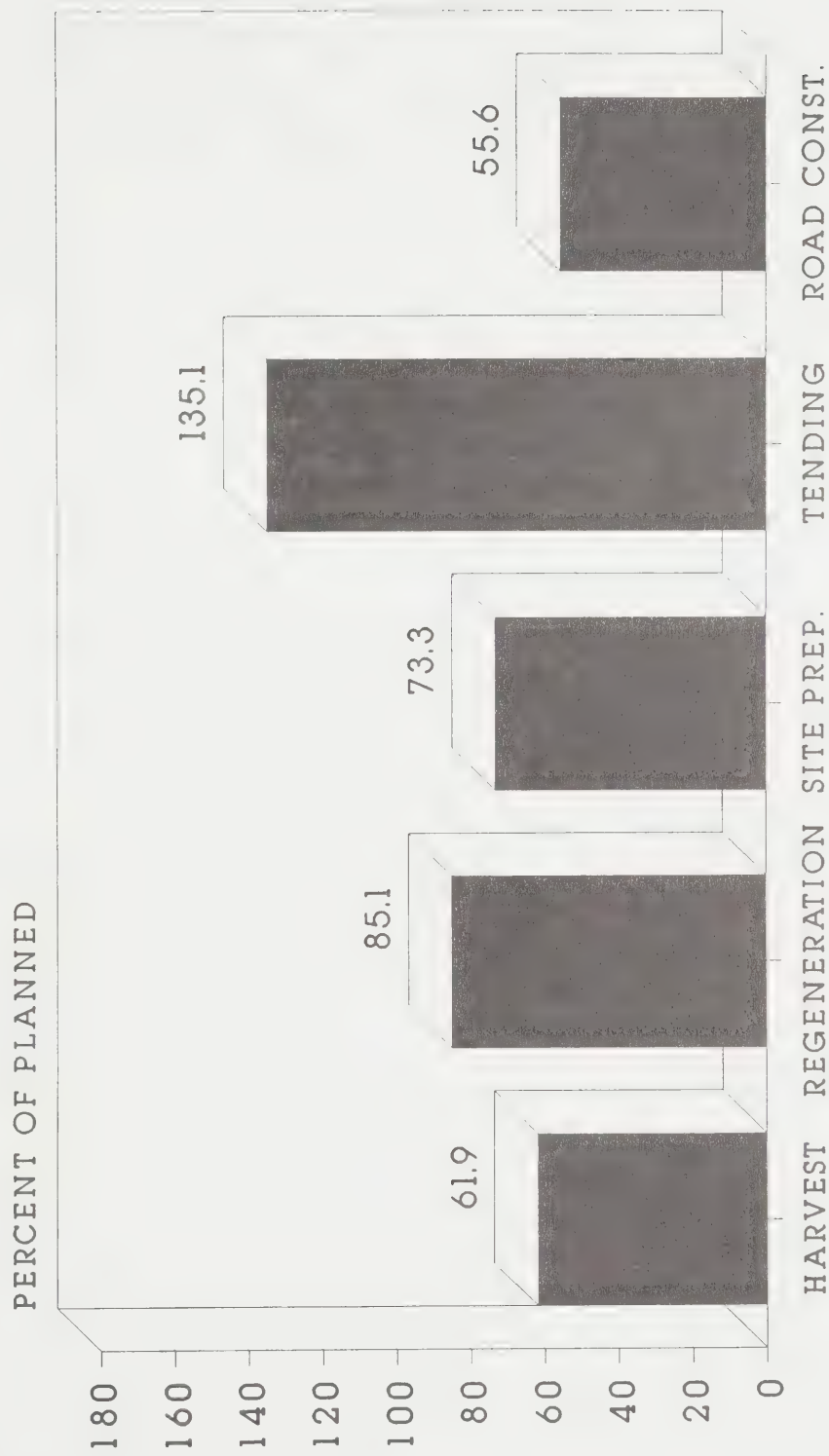
Summary of Company Forest Operations with Ministry Funding

FMA Expenditure and
Accomplishment Report
For The Five-Year Period
1986-1991FMA 500800
Black River Forest
Great West Timber Ltd.

Activity		Area (hectares)	Cost (dollars)
Actual Harvest		8,738	
Natural Regeneration		783	
Artificial Regeneration	- Planting	5,704	
	- Seeding	17	
Total Regeneration		6,504	\$ 2,509,580
Site Preparation	- Mechanical	5,751	
	- Chemical	1,003	
	- Prescribed Burning	622	
Total Site Preparation		7,376	\$ 1,778,193
Tending	- Chemical Cleaning	6,642	\$ 384,371
	- Cost of Chemicals		\$ 578,018
Total Tending		6,642	\$ 962,389
Total Silvicultural Payments			\$ 5,250,162
		(kilometres)	
Road Construction	- Primary	21.8	\$ 1,282,290
	- Secondary	21.7	\$ 315,565
Total Road Construction		43.5	\$ 1,597,855
Road Maintenance		1,054.0	\$ 523,570
Total Road Payments			\$ 2,121,425
Total Payments			\$ 7,371,587

Source: Annual Reports, Tables 6.1, 6.4.1, 6.6, 6.4.3

FIGURE 1: COMPARISON OF 1986-1991
OPERATING PLAN VS. ACTUAL
FMA 500800 BLACK RIVER FOREST



Source: 1990-91 Annual Report
1986-91 Operating Plan.

Detailed explanations of deviations of actual levels from planned levels for harvest are given in Section 2.3 - "Harvest Levels, Maximum Allowable Depletion, Yields and Wood Flow" and for road construction in Section 2.6 - "Road Construction and Maintenance".

The level of harvesting was 62% of the approved five-year Operating Plan. This has led to a corresponding decrease in the other planned activities such that renewal and site preparation were 85% and 73% respectively of the planned amounts. The Company exceeded their tending target by 35% by treating NSR areas as well as their own plantations (refer to Figure 1). The effect of the additional silvicultural work is evident since there is very little backlog area remaining in the Black River Forest.

There were three major amendments, 15 minor, and one administrative amendment to the Operating Plan. The Ministry initiated some of the amendments to add new Areas of Concern (AOCs). The other amendments involved changes in road locations and harvest blocks, a request to harvest some former "surplus" stands and the declaration of additional surplus.

2.2 THE GROUND RULES

2.2.1. KNOWLEDGE AND FAMILIARITY WITH THE GROUND RULES AND THE AGREEMENT

The Black River Forest contains some difficult sites such as steep slopes and shallow sites. The original silvicultural Ground Rules for these sites, classified by working groups, are relatively general and are of little use in providing prescriptions for regeneration of the Black River Forest. As a result the present staff have developed, through trial and error, specific prescriptions for areas within the working group classified sites. The remaining guidelines and standards in the Ground Rules and the Agreement were updated annually as required and utilized by the Company staff for their timber management practices on the Black River Forest.

The new Ground Rules (1991-96) benefit from the development of the Forest Ecosystem Classification (FEC) for North Western Ontario in 1989. The new Ground Rules are more precise and should provide more detailed guidance to new practitioners on the FMA and should facilitate future performance audits.

2.2.2 CONFORMITY OF HARVEST AND SILVICULTURAL OPERATIONS WITH THE GROUND RULES

The 1986-91 silvicultural Ground Rules provided little guidance for regenerating the challenging sites that exist on the Black River Forest. However, prescriptions have been developed that provide a better match of species and site. Furthermore the Company has attempted to convert selected balsam fir, poplar, and white birch working group sites to conifer excluding balsam fir. The Committee visited some of these sites and was impressed with the progress that has been made considering that conversion of these sites to exclude the balsam fir component is a difficult task.

The Committee was concerned that some of the planted spruce sites are exhibiting good survival but poor growth. Many of the areas that were planted to spruce were blade-scarified in the past. These areas also tended to be older cutovers (NSR areas). The Company makes the point that blade-scarification in general has been greatly reduced and that the Company is attempting to limit scarification only to areas that will be planted with jack pine. The silvicultural Ground Rules indicated a ten year delay period for modified harvest cut and clearcut areas with natural regeneration prescriptions before they attain free to grow (FTG) status. The Committee was concerned that some of the spruce sites that are planted will also take ten or more years to attain FTG status. The Ground Rules do not specify the time period it should take for plantations to reach FTG status, hence it is difficult to determine the effectiveness of the prescription.

RECOMMENDATION: That all the prescriptions in the silvicultural Ground Rules specify the period of time expected for each site and species classification to reach FTG status.

The implementation of this recommendation would enable a measure of the effectiveness of the silvicultural prescription to be determined.

2.2.3 CONFORMITY OF INVOICING WITH THE GROUND RULES

The project records and corresponding invoices were sampled for accuracy in the office and field. No major discrepancies were found. The procedures as set out in the Ground Rules were followed.

2.2.4 PREPARATION OF NEW GROUND RULES

The new Ground Rules for the 1991-1996 period are complete and have been approved by the Ministry. The Committee noted that the silvicultural specifications and standards were improved. The Ground Rules for normal operations were made more site specific by incorporating the vegetation types as defined in the Forest Ecosystem Classification (FEC) for Northwestern Ontario. Some additional site types were also identified with their own associated prescriptions. However, as indicated in Section 2.2.2 - "Conformity of Harvest and Silvicultural Operations with the Ground Rules", the time period required to reach FTG should be identified with each prescription, including those areas where no treatment is prescribed.

The Committee was puzzled that no provision for alternate supply was required in case of crop failure for planting stock supplied by the Company. The Company believes that it would be able to replace some or all of a potential shortfall. Furthermore, interim payments for Company supplied stock are forgivable if a major crop failure occurs, yet no categories were listed for the types of failures that would be included in this clause. If the grower was negligent (i.e., did not have a backup for temperature control and the trees received serious injury) it appears that payments would be forgivable. The Company and/or grower should be held accountable for the risk, as they are for the performance of the other silvicultural work.

2.3 HARVEST LEVELS, MAXIMUM ALLOWABLE DEPLETION, YIELDS AND WOOD FLOW

According to paragraph 20(1) of the Agreement, the Company has agreed to maintain its harvest on the Black River Forest at a level between 90 percent and 110 percent of the adjusted maximum allowable depletion (MAD) for each working group. Using paragraph 20(2) of the Agreement, the Company may request the Ministry to authorize variations to the levels specified in the Agreement.

Paragraphs 20(3) and 20(4) of the Agreement provide for either a rectification by the Agreement holder of any overcut, or liquidated damages - to be paid by the Agreement holder - in the event of an under-cut on the Agreement area in a specified five-year period. The Agreement holder may avoid liquidated damages through the declaration of timber surplus (paragraph 20(5)) to its needs in an approved Management Plan.

Table 2 shows a comparison of planned to actual depletions by area. Three factors occurred during the five-year period which caused major harvesting deviations from the five-year Operating Plan;

- i) The increased intensity of the spruce budworm epidemics caused greater than predicted mortality resulting in some stands being by passed and other stands not previously allocated, being harvested. The Company did however amend the Operating Plan to permit the harvest of some allocated stands that had originally been declared surplus.
- ii) The softwood lumber export tax and the rise in the value of the Canadian dollar (as compared to the U.S. dollar) caused sawmills to increase lumber production to reduce per unit production costs. The additional resulting production of wood chips and pulpwood caused a saturation of the purchased fibre market which in turn resulted in sawmill shutdowns and slowdowns.
- iii) The start-up of the poplar chipping plant in Dubreuilville to supply the Kimberly-Clark pulpmill in Terrace Bay, the downturn in the hardwood pulp market, and the closure of the MacMillan Bloedel waferboard plant in Thunder Bay, virtually eliminated the market for poplar from the Black River FMA.

These factors resulted in an additional 4,326 hectares, previously allocated, being declared surplus. The Company notified the Ministry of this additional surplus on December 5, 1989. Most of this surplus was in the spruce, balsam fir, and poplar working groups due to the Company's inability to sell their products. This additional surplus was partially offset by amendments to harvest 2,700 hectares not allocated in the five-year Operating Plan. These amendments were made primarily to accommodate several timber salvage programs including salvage harvesting and the prescribed burning of budworm-damaged balsam stands, and for various other reasons. Although made available to other companies, none of the declared surplus was used. At the time the surplus was declared, the Company also requested approval to harvest 603 hectares of allocated area that had originally been declared surplus. The Ministry gave approval to the Company to harvest 500 hectares.

Figure 2 shows that the Black River Forest was not utilized to its full potential as only 36% of the allowable hardwood working groups were depleted, while 80% of the conifer working groups were depleted. A total of 63% of the allowable depletion in all working groups combined was depleted by harvesting, reserves, withdrawals and by-passed areas.

TABLE 2

Depletion of Agreement Area for 1986-1991
(hectares)FMA 500800
Black River Forest
Great West Timber Ltd.

Working Group	Maximum Allowable Depletion	Reserves	Declared Surplus	Adjusted MAD	Harvest	Bypass	Natural Depletion*	Actual Depletion
Spruce 1	4,730	227	1,020	3,483	3,805	866	199	4,004
Spruce 3	640	36	339	265	267	105	10	277
Fir	3,270	-	1,816	2,635	3,149	449	250	3,399
Jack Pine	2,255	123	1,126	1,006	1,012	119	126	1,138
Other Conifer	150	-	116	36	39	10	29	68
Poplar 1	2,145	65	856	1,224	1,214	207	46	1,260
Poplar 3	1,300	60	295	945	857	356	16	873
Birch 1	2,030	20	1,769	241	309	34	1	310
Birch 3	1,941	21	1,919	249	246	14	-	246
TOTAL	18,461	552	9,256	10,084	10,898	2,160	677	11,575

(1) Adjusted MAD = MAD - (Reserves + Surplus)

(2) Harvest = Gross Area Harvested including Bypass

(3) Actual Depletion = Harvest + Reserves + Natural Depletion

Note: Figures represent 4 years actual data and final year estimated data

Source: 1986-91 Operating Plan, Annual Reports Table 6.1, 5th year Table 6.2

* natural depletion includes actual reserves of
479 hectares

The 1986-91 MAD for the Black River Forest was 18,461 hectares (60% conifer, 40% hardwoods). The 11,575 hectares depleted consisted of 77% conifer and 23% hardwoods. The Company requested and the Ministry approved the acceleration of the balsam fir MAD to 144%.

A yield of 149 cubic meters per hectare for the 1981-86 period was exceptionally high compared to the 93 cubic meters achieved in the 1986-91 five-year period. The lower yield was a reflection of the reduced hardwood market and the increase in mortality from the budworm epidemic. The forecast yield of 83 cubic meters per hectare for the 1991-96 period reflects the continuing mortality of conifer expected from the budworm outbreak and a lack of market for the hardwoods.

The operating plan forecast annual wood flows of 236,750 cubic meters (180,750 conifer and 56,000 poplar) consisted of 70,750 cubic meters of conifer to the Company sawmill (in Thunder Bay), 110,000 conifer and 50,000 poplar pulpwood to Kimberly-Clark's pulpmill (in Terrace Bay), and 6,000 poplar veneer to MacMillan Bloedel Ltd. (Nipigon), with Lajambe Forest Products (Sault Ste. Marie) holding a first right-of-refusal on white birch veneer material on the license. Wood flows were severely disrupted by the three factors mentioned previously which caused major harvesting shortfalls and few objectives were met.

Kimberly-Clark averaged 104,000 cubic meters vs. the 160,000 annual forecast in the first three years and eliminated most wood deliveries from the Black River Forest in the last two years of the period, as a result of the start-up of the Dubreuilville poplar chipping plant.

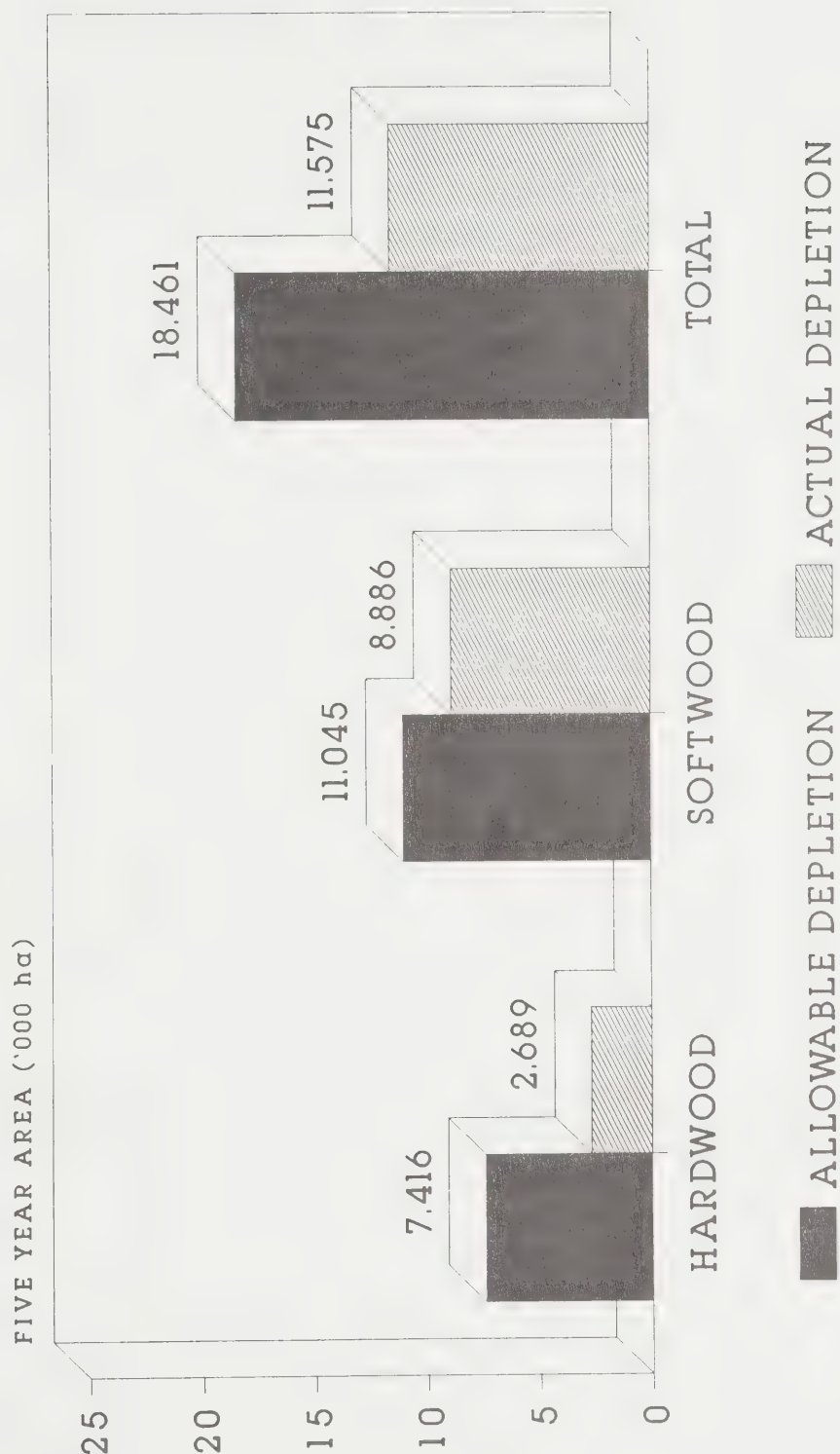
MacMillan Bloedel purchased 5,500 cubic meters from the Black River Forest compared to a five-year forecast of 30,000. The principle reason for the reduction in sales was directly related to the elimination of the poplar pulpwood market. All of the poplar veneer bolts that had originally been planned to be sold to MacMillan Bloedel's poplar plywood plant in Nipigon were to have been produced from the poplar pulpwood slashing operation on the Black River Forest. In addition the Company was unable to produce white birch veneer bolts for Lajambe Forest Products.

The Pic Heron Bay Development Corporation (Indian Band # 50) have been given an allocation of 7,000 cords annually through a Ministry directive. The Corporation has only utilized 190 hectares of the 1,145 hectares allocated in the five-year period.

The Company attempted to offset these shortfalls by conifer sales to Abitibi and local sawmills, as well as increasing the usage in their sawmill to 400,000 cubic meters vs. a forecast of 353,750, an increase of 11.3%. The final outcome was a wood usage of 785,955 cubic meters vs. a forecast of 1,196,350, a creditable amount considering the downturn in the market and production facility changes during the five year period. The Company used 400,000 cubic meters while 385,955 went to other mills. The shortfall of 410,395 cubic meters consisted of 235,795 of conifer and 174,600 of poplar allocated but not used by other parties.

It is the opinion of the Committee that circumstances beyond the control of the Company were responsible for the undercuts. The Committee commends the Company and the Ministry for their initiative and flexibility to ensure that budworm infested stands were salvaged while healthy stands were left for future harvests.

FIGURE 2: COMPARISON OF 1986-1991
ALLOWABLE VS. ACTUAL DEPLETION
FMA 500800 BLACK RIVER FOREST



2.4 RELATIONSHIP BETWEEN HARVEST AND GROWTH AND FREE TO GROW ASSESSMENTS

After ten years of FMA activity, 540 hectares have been assessed and approved as FTG and placed back into the productive forest. The relatively low amount is of concern to the Committee but it was noted that an additional 600 hectares is scheduled to be assessed this coming year. A special effort was made to inspect as many candidate FTG areas as possible in the site visits. The long establishment period of many of the plantations and the absence of specific time periods for the attainment of FTG status in the Ground Rules, contribute significantly to the delay period. The Company has indicated it expects to substantially increase the number of candidate FTG areas over the next few years as the establishment periods of the spruce sites mature.

During the 1981-86 period, 3,259 hectares were harvested on the Black River Forest. The Company and Ministry during the "phase in" period treated an equivalent area of 3,708 hectares, 301 hectares were prescribed for natural regeneration. The Committee commends both parties for their regeneration program which exceeded the equivalent cutover area by 750 hectares.

The Committee noted that 2,839 hectares have received fifth year stocking assessments leaving 1,170 hectares from the first five year period to be assessed. Of the 2,839 hectares that were assessed, 400 hectares (14%) did not meet the minimum 40% stocking requirement and are being intensively surveyed this year by the Company to determine if and where retreatment is required. The Company and the Ministry have set a stocking target of 60% in the silvicultural Ground Rules. A total of 950 hectares (40%) failed to meet the stocking target at the fifth year.

FTG stands are placed back into the productive forest on the basis of stocking and FTG standards. No yield performance rating is assigned to a stand and therefore the Committee finds it difficult to comment on the relationship between harvest and growth. The Committee assumes that the FTG stands are contributing to the allowable cut, through their contribution to the MAD landbase and indirectly to the MAD level, but the amount is not quantified. In those areas where treatment was undertaken it is difficult to demonstrate that cutover yield performance is equal to or in excess of historical natural yields and that an increase in allowable cut or stumpage reduction is warranted. (refer to Section 23 of the Agreement).

RECOMMENDATION: That "benchmark" yield performance ratings be assigned to specific site and species classifications, so that stand or forest yield can be monitored.

2.5 NSR OBLIGATIONS

The Not Satisfactorily Regenerated (NSR) commitment of the Company was to treat 419 hectares in the 20 year period from 1981 to 2001. The Company treated 2,280 hectares in the first five-year period, thus exceeding their total commitment for the 20 year period. During the period under review the Company continued to treat NSR land. An additional 1,772 hectares were treated, giving a total of 4,052 hectares in 10 years vs. a commitment of 419 hectares.

The Committee commends the Company for an excellent performance in treating pre-Agreement harvested areas.

2.6 ROAD CONSTRUCTION AND MAINTENANCE

Paragraph 31 of the Agreement provides for the Minister to pay, subject to a maximum amount per kilometre, for the construction or reconstruction of forest access roads on the agreement area. To be eligible for payment, roads must be detailed in an approved AWS and constructed according to the standards specified in schedule "E" of the Agreement.

The Black River Forest contains two major highways: #17 which runs east-west across the extreme southern end near Lake Superior, and #614 which bisects the southern half of the forest on a diagonal extending northward from #17 and ending at Manitouwadge on the north-western edge of the forest. During the life of the FMA (1981-1991), road funding provided for a total of 260.2 kilometres of new or reconstructed roads. Additions to these roads are needed to provide access to some of the tracts of old timber remaining on the periphery of the Agreement area.

The first Five-Year Review (1981-1986) of activities in the Black River Forest revealed an ambitious road-building program in which 216.7 kilometres of primary and secondary (65.7% primary) roads were constructed. In 1986-1991, road construction declined to 43.5 kilometres (20% of the level attained in the first five years). The decline reflected in part the good access already provided and therefore lower planned construction for 1986-1991, as well as a significant shortfall in actual achievements. Most of the planned primary roads were constructed (78.4%), but less than half of the secondary roads (39.8%) were built. The Company required fewer roads than originally thought, mainly because of a general market-driven decline in harvest levels (see Section 2.3 - "Harvest Levels, Maximum Allowable Depletion, Yields and Wood Flow"). Also, some of the secondary roads planned by the Company were built to tertiary road standards when requirements for access for silvicultural purposes changed (e.g., a prescribed burn was cancelled). One secondary road scheduled to be built by a third party operator (Pic 50-Heron Bay Development Corporation) was not constructed; the level of harvest by this third party was correspondingly low.

Most of the new mileage added over the last five years represented the extension of existing roads toward the outer edges of the Agreement area. The extensive road network helped the Company to disperse their cuts widely over the Black River Forest. Despite the good access, a large proportion of the oldest timber was not allocated during 1986-1991. The Operating Plan shows that the Black River Forest contained 8,639 hectares of the spruce forest unit in the 121+ age class, yet only 1.3% of the allocation for this forest unit was in that age class. Rather than harvesting old spruce, the Company decided to cut and convert a backlog of old balsam fir stands which were severely damaged by the spruce budworm (see Section 3.0 - "Maintenance of Productivity").

The Company did a good job of locating roads. Planned and actual road locations matched closely, as shown by a comparison of the road locations marked on the operating plan maps and those on mylar FRI update maps which were produced from aerial photographs of cutover areas (scale of both sets of maps was 1:15,840). In the Black River Forest, roads are built by contractors under the supervision of a foreman from the North West Timber Company.

Once a segment of road eligible for FMA funding in 1986-1991 was completed, a representative from the Ministry and the Company conducted a joint inspection in which road length, gravel depth, road width, and sighting distances were measured. Any deficiencies in the road noted during the inspection were corrected before invoicing.

During the period under review, road maintenance reached 71.0% of the level planned. According to the Company, primary roads were graded regularly, and secondary roads were graded as required. The public was free to use the extensive network of roads established and maintained by the Company with and without FMA funding in the Black River Forest. The one exception was the Garnham Road which was closed to public use in order to protect a remote tourist operation. The Committee noted that the Company created some small parking areas and turn-around spots near popular fishing areas to ensure public safety along the haul roads.

2.7 COMPANY RECORDS

The silvicultural records of the Company are stored in a computerized data base program which is backed up by hard copy paper project files and mylar silvicultural maps. Each project is given a unique number which, when subdivided into its components, can be used to trace back from the current stand to all the treatments performed on that site. As well as basic information on the type and extent of the silvicultural project, the computer files for the project area contain additional data which could be used to ensure the success of silvicultural treatments in the future. Examples are: data representing cruises, permanent sample plots, competition surveys, planting stock quality, and evaluations of the performance of contractors.

Each year after aerial photography in June, roads and harvest cuts are marked on mylar Forest Resource Inventory (FRI) update maps with the aid of a tracing device (sketchmaster). The size of cut areas is then determined with an electronic planimeter. Depletion data is held in a manual record-keeping system, as are the road records. The Committee found it difficult to follow individual roads through the various plans and reports because names alone were used in the text of the Operating Plan while numbers and names were used elsewhere; often the names changed while the numbers remained constant. The Committee encourages the Company to continue to use its numbering system for roads to avoid confusion.

2.8 ANNUAL REPORTS

Paragraph 38 of the Agreement requires that the Company prepare an Annual Report in accordance with the Timber Management Planning Manual summarizing in tabular form the road construction, depletion, and silvicultural operations conducted during the preceding year.

Both submission and approval dates of Annual Reports help to reveal problems in the workings of an FMA. Each of the Company's Annual Reports for the Black River Forest consisted of the required tables as well as a covering letter which served as a permanent record of the submission date. The Ministry did not formally acknowledge when reports were approved.

A synopsis of highlights of the previous year with explanations for major deviations from planned levels of activity would serve as supporting documentation for the five-year summaries and would aid the Company in the preparation of portions of the next Timber Management Plan (i.e., Report on Past Forest Operations). Formal acknowledgement of approval dates by the Ministry would ensure that both parties are aware of the status of a report.

RECOMMENDATION: That Annual Reports include a descriptive section summarizing the year's highlights including an explanation for deviations from target levels of achievement, amendments, and other significant events. In addition, that the Ministry formally acknowledge the approval of Annual Reports for completeness and accuracy.

Up to the time of the review, the Company submitted all reports to the Ministry by their due dates. Once received by the Ministry, reported values for silvicultural and road projects were checked against their invoice records and differences were reconciled. The invoiced areas had been agreed to during joint field inspections prior to invoicing. Despite the checking of reported values, a few clerical errors were missed. These were eventually detected by the Company and were corrected in subsequent Annual Reports which included corrected values as well as explanatory footnotes.

The Committee examined the Company's invoice files for three years of mechanical site preparation and aerial tending projects and concluded that the size of the project areas was reported correctly in the relevant Annual Reports. The Committee was satisfied that silvicultural treatments and depletions were reported in their proper categories and that there was no double counting in the Annual Reports. The length of all roads constructed with FMA funding during 1986-1991 was the same in the Annual Reports and on the invoices of the Company.

2.9 INTEGRATION WITH OTHER FOREST USES

Section 14 of the Ground Rules of the Agreement, entitled Integration of Other Resource Values in Timber Management, explains how the Company and the Ministry will manage certain lands, designated as Areas of Concern (AOCs), for uses other than or in addition to timber production. During the period under review, AOCs were established mainly around great blue heron colonies and the shorelines of lakes, ponds, and creeks.

The Operating Plan for 1986-1991 was confusing in its treatment of AOCs; the Ministry listed all AOCs as "deferments", even in cases where permanent reserves were required (e.g., around heronries), and little detail on the purpose of individual AOCs was provided. For example, often the value being protected was described only as "wildlife habitat". Despite these problems, the Committee concluded that AOCs were well protected during the last five years. Moreover, the Committee was greatly impressed by the progressive approach taken by the two parties to the treatment of AOCs on the shoreline of warm-water lakes. Modified cuts were performed around several lakes. In these AOCs, timber along the shoreline was harvested in alternating blocks whose total area did not exceed 50% of the length of the shoreline, consistent with the Timber Management Guidelines for the Protection of Fish Habitat. According to the Company, return cuts (which might be permitted once the adjacent cutovers are revegetated) are likely in only 5% of the cases because of the small volumes of wood involved. The Committee believes that variation in AOCs around warm water lakes (full reserves or modified cuts) is desirable and likely results in a greater diversity of

wildlife habitat and provides for more species of wildlife over the FMA area than could be achieved by establishing full reserves alone. For example, full reserves probably do not provide good beaver habitat.

The established road network and the existing dispersion of stands of old timber resulted in harvest areas which were widely spread over the Black River Forest, rather than concentrated in a few larger blocks. Wide separation of small cuts is consistent with the principles of habitat management for wildlife. Field observations by the Committee suggested that the size of individual cuts made between 1986-1991 was not excessive as a result of their irregular shapes, lakeshore reserves, and the stands of inoperable timber (bypassed for economic reasons) which provided shelter patches for wildlife. The Committee commends the Company and the Ministry for their more pro-active attitude toward the needs of wildlife in the new TMP where each proposed harvest block was reviewed for compliance with the Timber Management Guidelines for the Provision of Moose Habitat, and corridors and additional shelter patches were added where needed.

Some of the Company's silvicultural treatments indirectly benefit wildlife. For example, field inspections revealed an abundance of standing poplar snags where chemical site preparation had been used, in contrast to the very clean cuts which resulted after mechanical site preparation. The snags will benefit cavity-nesting wildlife in the clearcuts and as the surrounding forest matures.

The Committee inspected two great blue heron colonies from the air and noted that they were well protected within reserves. Ministry surveys suggested that there were no bald eagle or osprey nests in or adjacent to areas harvested during the period under review, or where the Company will be working during the next operating period. Compared with some other FMAs, the Black River Forest contains fewer large lakes of the type used by eagles and ospreys.

Mining is significant in the Black River Forest but the area has been developed relatively little for commercial recreation; there is only one tourist outfitter with a fly-in fishing camp. During the last operating period, the Company and the Ministry worked together to resolve conflicts which developed between the outfitter and the general public regarding the impact of forestry operations near the lake. To help preserve the remoteness of this fly-in camp, a large reserve was established around the lake, logging was restricted to winter, and signs were used to prohibit access to the lake from the nearest road.

Prior to 1989, specifications for most stream crossings were left up to the Company, and in most cases the crossings were adequate (see also the first five-year review of the Black River Forest). However, the last two AWSs included a water crossing review sheet which specified for each proposed stream crossing the size of culverts required (based on drainage calculations), the size proposed by the Company, the size approved by the Ministry, and space for both parties to comment on the nature of the crossing and its adequacy. This will help to ensure that potential problems at difficult crossings are resolved before construction. Field checks by the Committee revealed that most of the newer crossings in the Black River Forest were performing extremely well; chronic washout problems, such as those noted at some of the older crossings, will be prevented at the new crossings where riprap was used.

The construction of adequate crossings is difficult in some parts of the Black River Forest where the subgrade of silt and clay is prone to slumping and there is a local shortage of gravel and loose rock

which are essential for stabilization. The Ministry and the Company worked together and used creative solutions in an attempt to repair problematic major crossings on some older roads. The Committee encourages both parties to show similar regard for small crossings on naturally abandoned roads (including tertiary roads) which should be inspected periodically in accordance with the Environmental Guidelines for Access Roads and Water Crossings.

Trespass charges levied on the Company by the Ministry were a problem during the period under review. However, by making lakeshore reserves larger than required and straightening the edges (rather than attempting to follow sinuous shorelines), the Company hopes to prevent accidental cutting into shoreline reserves while at the same time minimizing the costs of laying reserves out in the field. The Committee noted that most trespasses were accidental and that no charges have been levied recently.

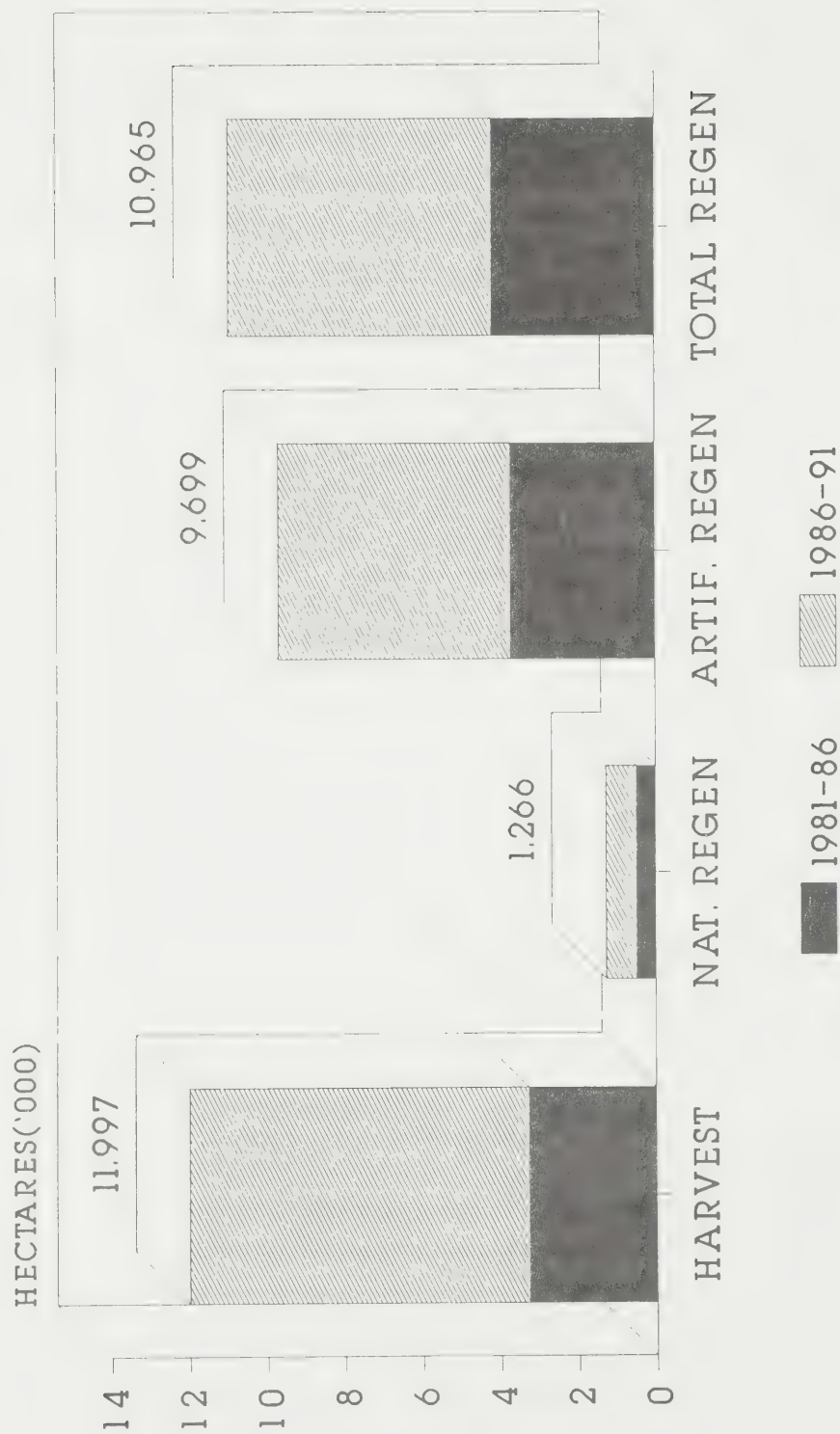
The Company is sincere about integrating other uses and concerns and interests of the community into the management of the Black River Forest. Staff have attended workshops on the application of various guidelines, and have made special presentations on their forest management plans to groups of concerned citizens. The Company has given tours of its bush operations to public and high school classes and to town councils. The Company's old Camp 70 is used free of charge annually by the Boy Scouts and Girl Guides who are supplied with trees by the Ministry for planting. For the new TMP, the Company, the Ministry, and others identified 205 AOCs, including archaeological sites. Also, the Ministry set up a public advisory committee for the new TMP which included representatives from local municipalities, schools, sportsmen's clubs, and the trappers' council. The Company concluded that the public advisory committee worked extremely well.

3. MAINTENANCE OF PRODUCTIVITY

In evaluating the extent of renewal taking place in the Black River Forest, observations show that the poplar working group regenerates naturally to poplar especially when cut in the winter or spring. The conifer and birch working groups generally require renewal treatment to produce a productive conifer forest. In analyzing the conifer and birch stands a total of 6,869 hectares (7,230 less 5 percent for road access) required renewal during the five-year period. The Company renewed 6,504 hectares of which 1,772 hectares was NSR backlog area. The Committee was impressed with this performance of regenerating an area equivalent to 95% of the harvest area during the five year period.

The Committee believes that the Black River Forest has been well managed during the past ten years by the FMA holders and the Ministry. The total renewal column in Figure 3 shows that 91% of an area equal to the area harvested was renewed on the Black River Forest. The natural regeneration column includes 207 hectares of the poplar working group and the remaining 1,301 hectares of the poplar working group cutover will be converted to conifer working groups. While the renewal of the recent cutover shows only 5,647 hectares vs. a cutover of 11,997 hectares, there was an additional 1,266 hectares of natural regeneration as well as 1990-91 cutover of 2,296 hectares which cannot be regenerated until 1991-92. Renewal is always one or more years following harvest, as the wood must be removed from the area to permit site preparation prior to planting or seeding. This backlog of recent cut will disappear in the next five year period as the renewal emphasis shifts from the NSR to the recent cutover.

FIGURE 3: 1981-1991
HARVEST AND REGENERATION
FMA 500800 BLACK RIVER FOREST



Source - 1986-91 TMP, Annual Reports

The Company and the Ministry are currently in the process of doing a re-inventory of the FMA. New aerial photographs were taken of the FMA in 1990 and new forest resources inventory maps as well as the new inventory are scheduled to be completed during the next five year period. The Company will be carrying out reconnaissance field surveys during this period to supplement the inventory data.

Special attention is being given to converting the budworm damaged balsam fir working group to a less susceptible spruce working group. In addition some of the better sites containing the poplar working group are being converted to spruce. The Committee believes that the Company is fully committed to ensuring the FMA is successful and that the forests are properly renewed.

In accordance with the Ground Rules (section 9.0 schedule C), the Company identified and recommended to the Ministry stands requiring protection from forest pests.

4. IMPLEMENTATION OF THE RECOMMENDATIONS OF THE FIRST FIVE-YEAR REVIEW

The recommendations resulting from the first five-year review of operations of the Company in the Black River Forest and the status of their implementation is as follows:

That renewal of the FMA be delayed until completion of an approved five-year Operating Plan and the Company satisfying the Ministry that it is in complete control of all planning activity for the Black River Forest.

A revised 1986-91 Operating Plan was submitted on December 12, 1986 and approved for implementation on March 31, 1987. The changes in ownership and accompanying personnel shifts were resolved by the fall of 1986. A second review was held in June of 1987 at which time the Company's progress was evaluated. Based on the results of the evaluation, renewal of the FMA was recommended for a further five year period. This was approved by the Minister in June, 1988.

That an organization be put in place which emphasizes the integration of harvesting operations and silviculture. This organization should reflect the corporate commitment to the Black River Forest FMA by the Company.

The prescriptions and operations viewed and visited by the Committee were carried out as integral parts of one forest operation, complying with the Ground Rules and regulations. The management and reporting relationships of the Company were clear and reflect a serious commitment by the Company to the Black River Forest.

That both the Company and the Ministry place emphasis on maintaining a close working relationship, which encourages a co-operative approach to management, including practical application of the ground rules. Both parties should promote information exchange and problem resolution through close consultation "in the field".

The Committee was impressed with the knowledge and experience of the Designated Crown Representative, and the Company's Chief Forester and Limit Forester. It was obvious that a good working relationship had been established. It was commented that achieving integrated forest management is much easier when those responsible are there on site, not in offices two hours distant.

That the road construction program be closely linked to the harvest cut on an annual basis. If further roads are required, emphasis should be placed on secondary road construction, rather than additions to the primary road network.

In 1981-1986, the ratio of hectares harvested to kilometres of road constructed in the Black River Forest was very low, 17.6 hectares per kilometre, when compared with other FMAs. However, during 1986-1991, road building was reduced by 85% for primary roads and 29% for secondary roads while harvesting more than doubled. Consequently, during the second five years of the Agreement the ratio of hectares per kilometre rose to one of the highest levels among FMAs in Ontario, 200.9 hectares per kilometre.

5. COMPANY FOREST MANAGEMENT ACTIVITIES CONDUCTED BEYOND THE OBLIGATIONS UNDER THE AGREEMENT

During the ten year period of the Agreement the Company has demonstrated their desire to make the FMA a success. Their treatment of NSR is an excellent example of going the extra mile when 4,052 hectares were treated compared to a obligation of 419 hectares.

The Company has done voluntary field trials in partnership with chemical and equipment suppliers to reduce costs and to develop alternative vegetation management practices. For example, the Company has undertaken field trials of the Bracke Herbicider. As well the Company has undertaken tending trials using Vision, Velpar, and Pronone herbicides. A Mynic Data Recorder is currently being evaluated to ensure silvicultural data is more current, complete, and accurate. The system should reduce paper work as the recorder data tape can be inserted daily into a computer for compilation and data storage.

6. STAKEHOLDER CONCERNS

6.1 PUBLIC CONCERNS

On April 11, 1991 a Public Concern Meeting was held in Manitouwadge. The review co-ordinator, John M. Duncanson, chaired the meeting. Notices were sent out prior to the meeting to various interested parties. The notice of the meeting was advertised in the local newspapers, twelve people attended the meeting.

Following a description of the FMA review process by the chairman, the floor was opened to discussion and expression of concerns.

There were no public concerns expressed.

6.2 COMPANY CONCERNS

On May 6, 1991 the Review Committee met with Company officials to discuss their concerns regarding the management of the Black River Forest. The Company provided a list of their concerns and comments in writing. The following are the Company's concerns;

- i) A poor understanding and appreciation of basic business economics and the new forest products marketplace by Ministry personnel. The Company feels that it's need for flexibility in matching end product demand with planned harvest, is interpreted by the Ministry as "poor planning".
- ii) Operations outside of the Black River Forest that do not adhere to the "best end use" philosophy, constrain the Company's operations in the Black River Forest. Sawlog material cut from Crown Lands (i.e., the Steel River CMU) continues to be slashed into pulpwood.
- iii) The gradual and continuing erosion of funding for Forest Management Agreements.
- iv) The "paper chase" is resulting in a generation of foresters that never get out into the bush. Too much of a foresters time is spent on paperwork.
- v) Cashflow is critical to the Company's business, especially in tough economic times. The billing process should be sped up.

6.3 MINISTRY CONCERNS

On May 9, 1991 the Review Committee met with Ministry staff to discuss their concerns regarding the management of the Black River Forest. The Ministry provided a list of their concerns and comments in writing. The following are the Ministry's concerns;

- i) The local Ministry staff are concerned that the Company organization with regard to North West Timber is having an effect on harvest levels on the Black River Forest. i.e., North West carries out the harvesting and silvicultural operations on behalf of the Company on the Big Pic CMU as well as the Black River Forest. The Ministry is concerned about the Company's priorities.
- ii) The Ministry is concerned about the difficulty the Company has marketing pulpwood, and has suggested the addition of a chipper.
- iii) The Ministry is concerned about the significant number of amendments proposed over the five year period. The Ministry had a difficult time accepting the validity and the need for all of the requests.
- iv) The Ministry is concerned with the amount of garbage (primarily oil cans) left in harvest areas.

7. CONCLUSIONS AND RECOMMENDATIONS

The Committee is satisfied that the obligations of the Company under the Agreement have been satisfactorily performed by the Company during the five-year term under review.

The change in ownership and corresponding shift in personnel disrupted the management of the Black River Forest in its initial years, and hence the delay in the approval of the first five-year review. The Committee is confident that all of the administration problems concerning the change in ownership are history.

The Company has treated a total of 4,052 hectares of NSR land over the past ten years, despite an original commitment of only 419 hectares.

The Committee noted that the Company has attempted with some success in converting selected balsam fir, poplar, and white birch working groups to conifer. The Committee was also impressed with the high minimum stocking objective of 60% that the Company has set for itself in the silvicultural Ground Rules.

The Committee is satisfied that the recommendations of the first five-year review have been adequately addressed.

The Committee was impressed by the progressive approach toward integrated resource management which was taken by the Ministry and the Company, as was illustrated by their treatment of AOCs around shorelines. The Company and the Ministry are commended for their co-operation in the treatment of problematic water crossings, and are encouraged to inspect old crossings on abandoned roads for adequacy and to repair or remove them when necessary.

RECOMMENDATION No. 1: That the Minister extend the remaining periods of FMA 500800 by a further term of five consecutive years to March 31, 2011.

RECOMMENDATION No. 2: That all the prescriptions in the silvicultural Ground Rules specify the period of time expected for each site and species classification to reach FTG status.

RECOMMENDATION No. 3: That "benchmark" yield performance ratings be assigned to specific site and species classifications, so that stand or forest yield can be monitored.

RECOMMENDATION No. 4: That Annual Reports include a descriptive section summarizing the year's highlights including an explanation for deviations from target levels of achievement, amendments, and other significant events. In addition, that the Ministry formally acknowledge the approval of Annual Reports for completeness and accuracy.

8. REVIEW COMMITTEE STATEMENT

We have examined the performance of Great West Timber Ltd. as pertaining to its obligations under the Forest Management Agreement No. 500800 (Black River Forest) during the past five year period ended March 31, 1991.

In our opinion, the Company has conformed to the rules as outlined in the Forest Management Agreement.

signed *The Review Committee*

The Review Committee

**SECOND FIVE-YEAR REVIEW
DOMTAR INC.**

**LAKE NIPIGON FOREST
FMA 500900
1986-1991**

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1. INTRODUCTION

1.1 PURPOSE OF THE REVIEW

The Ministry of Natural Resources (the "Ministry") and Domtar Inc. (the "Company") signed a Forest Management Agreement or FMA (the "Agreement") on March 31, 1981. This Agreement, number 500900, was designated the **LAKE NIPIGON FOREST**. The primary purpose of this Agreement was to provide a continuous supply of forest products for the wood processing plant of the Company at Red Rock, Ontario and to ensure that the Lake Nipigon Forest is harvested and regenerated to produce successive crops of timber on a sustained yield basis.

A review of the first five consecutive years of the Agreement was conducted on the Lake Nipigon Forest in 1986. As the result of a favourable report of Company performance of its obligations under the Agreement, the Ministry and Domtar signed an extension to FMA 500900 on September 17, 1987 with the new Agreement having a term of 20 years commencing April 1, 1986.

The review of the second five-year period (1986-1991) of the Agreement was conducted on the Lake Nipigon Forest to determine whether the obligations of the Company under the Agreement have been satisfactorily performed and to recommend to the Minister of Natural Resources whether the remaining period of the Agreement should be extended for a further term of five years.

1.2 THE REVIEW COMMITTEE

The review was carried out by a committee (the "Committee"), engaged by Duncanson Investment Research Inc. under contract with the Ministry. The Committee members were:

Mr. John M. Duncanson, B.Sc.F., R.P.F., Review Coordinator
- President, Duncanson Investment Research Inc.
- independent financial analyst specializing in the forest industry

Mr. Victor I. Sleep, B.Sc.F., R.P.F., Private Forestry Consultant
- forestry specialist - 39 years in Boreal Forest management
- Manager of Forestry Services (Retired), Spruce Falls Power & Paper Co.

Ms. Kandyd Szuba, B.Sc.F., Ph.D., Private Consulting Biologist
- wildlife specialist - 14 years researching the habitat requirements of birds, and other wildlife of the Boreal Forest.

Mr. Herb Bax, B.Sc.F., R.P.F., President of KBM Forestry Consultants Inc.
- silvicultural specialist - 18 years practising forest silviculture in Northwestern and Northeastern Ontario

1.3 TASKS OF THE REVIEW COMMITTEE

The Committee's assignment was to undertake a fair and objective review of Domtar's performance on the Lake Nipigon Forest during the second five-year term, vis-a-vis its obligations under Forest Management Agreement 500900, as specified in detail in Appendix A - "Terms of Reference for the Second Fifth-Year Review of a Forest Management Agreement", and to make recommendations to the Ministry on the extension of the Agreement's term according to the "evergreen" section of the Agreement (Section 15, Paragraph 33).

The review was conducted by:

- inspecting the depletion, silvicultural and road records for adequacy and for conformity with the management plans and ground rules of the Agreement,
- comparing the levels of harvest and treatment of not satisfactorily regenerated (NSR) lands outlined in the Annual Reports with the levels required by provisions of the Agreement,
- selecting and field inspecting harvest cuts, silvicultural projects, and road construction typical of the techniques employed on the forest for conformity with the Agreement holder's records and for field applications of the ground rules,
- determining the degree to which other forest users and other forest values are accommodated in management planning and in field operations,
- meeting with Company and Ministry district staff to identify problem areas and Agreement concerns on the part of either party, and,
- meeting with other users of the forest in and adjacent to the Agreement area, i.e. local cottagers, hunting and fishing groups, native groups, and identifying with them problem areas or concerns on the part of the public with respect to the Agreement, its administration, and the working relationship with the Company and Ministry staff.
- examining and reporting upon the relationship between the harvest and growth, by applying free-to-grow (FTG) standards, including forest regeneration success that has occurred on the forest during the period,
- reviewing the recommendations of the first Five-Year Review and reporting on the status of implementation, and,
- examining and reporting if overall, the FMA objectives, to manage Crown timber on a sustained yield basis and supply the mills identified in the Agreement through the integration of harvest, renewal, and maintenance activities, are being met.

2. PROCEDURES AND FINDINGS

2.1 MANAGEMENT PLANNING

2.1.1 THE PREPARATION AND SUBMISSION OF PLANS

The Agreement requires the Company to prepare a Forest Management Plan, an Operating Plan, and Annual Work Schedules, Depletion Reports and Silvicultural Reports.

These documents must be prepared and submitted to the Ministry according to the time frame specified in the Agreement and in accordance with the planning manuals approved by the Ministry for this purpose.

The 1986-91 Forest Operating Plan was submitted (first draft, September 1985) and approved (final draft April 1986) within the required time frame. The five Annual Work Schedules (AWSs) were submitted and approved within the specified time periods.

The 1991-2011 Timber Management Plan (TMP) was submitted on September 12, 1990 and was approved by the Ministry on February 28, 1991. The 1991/96 Ground Rules were submitted on June 11, 1990 and at the time of this review had not yet received approval.

2.1.2 PLAN IMPLEMENTATION

The Agreement requires that the Company conduct its operations in accordance with the approved Management and Operating Plans and AWSs.

The Company had to respond rapidly to market changes and a major budworm infestation in the last five years. In addition the Company became completely mechanized in its woodland operations during this period which enabled it to harvest marginal and budworm killed stands. Only 40% of the planned harvest was achieved in this period (see Figure 1). Detailed explanations of deviations of actual from planned levels of harvest are given in Section 2.3 - "Harvest Levels, Maximum Allowable Depletion, Yields & Wood Flow".

The Committee noted that significant "contingency areas" have been allocated by the Company to provide for rapid flexibility in case of market shifts and to avoid major amendments to the plan. The Ministry has only general guidelines to distinguish between administrative, major, and minor amendments. The classification of the amendment type is at the discretion of the District Manager, who in turn assesses the significance and potential impact on the public and the environment as portended by the technical analysis by District staff.

There were three administrative, eight minor, and five major amendments to the Operating Plan during the period under review. Four of the amendments involved salvage cuts after blowdown or insect damage and two were cleanup operations. One amendment was initiated by the Ministry to allow implementation of the moose guidelines. Six of the amendments were at the request of third

TABLE 1

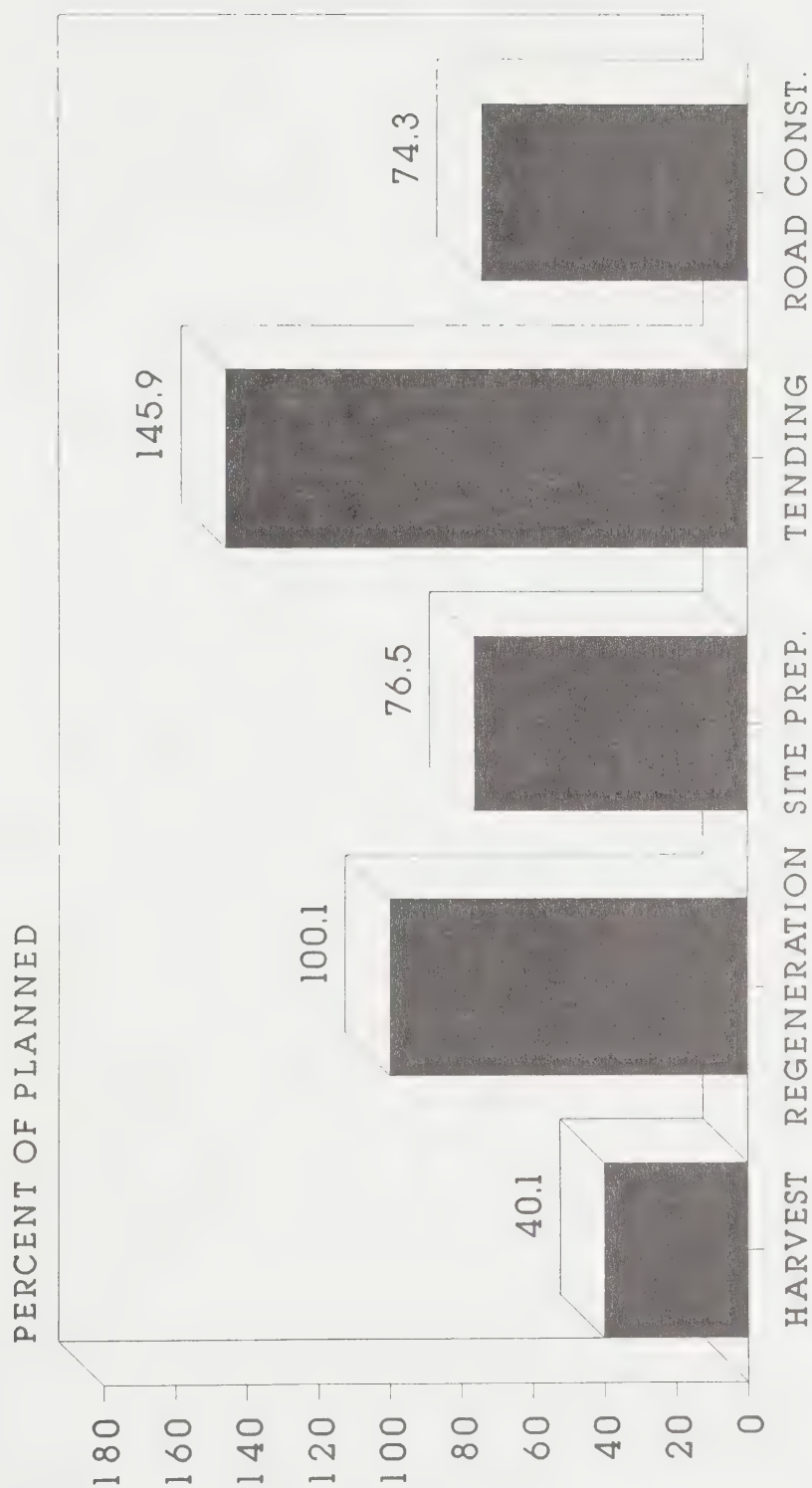
Summary of Company Forest Operations with Ministry Funding

FMA Expenditure and
Accomplishment Report
For The Five-Year Period
1986-1991FMA 500900
Lake Nipigon Forest
Domtar Inc.

Activity		Area (hectares)	Cost (dollars)
Actual Harvest		12,499	
Natural Regeneration		6,703	
Artificial Regeneration	- Planting	4,189	
	- Seeding	1,471	
Total Regeneration		12,363	\$ 1,743,051
Site Preparation	- Mechanical	6,151	
	- Chemical	418	
Total Site Preparation		6,569	\$ 2,048,755
Tending	- Chemical Cleaning	4,293	\$ 153,404
	- Manual Cleaning	56	
	- Chemical Cost		\$ 194,544
Total Tending		4,349	\$ 347,948
Total Silvicultural Payments			\$ 4,139,754
		(kilometres)	
Road Construction	- Primary	31.7	\$ 1,066,186
	- Secondary	88.6	\$ 1,176,440
Total Road Construction		120.3	\$ 2,242,626
Road Maintenance		929.5	\$ 459,132
Total Road Payments			\$ 2,701,758
Total Payments			\$ 6,841,512

Source: Annual Reports, Tables 6.1, 6.4.1, 6.6, 6.4.3

FIGURE 1: COMPARISON OF 1986-1991 OPERATING PLAN VS. ACTUAL FMA 500900 LAKE NIPIGON FOREST



Source: 1990-91 Annual Report

1986-91 Operating Plan.

Note: Harvest = Actual Harvest (Table 1)

parties. Most of the other amendments concerned requirements for additional harvest areas and roads.

Silvicultural operations and road construction carried out with Ministry funding are listed in Table 1. Road construction achieved 74% of its planned level, due to the shortfall in the harvest level and road funding.

All untreated areas that were harvested in 1981-86 are being reported in the 1986-91 period as regenerated to natural and are included in planned and actual levels. Hence renewal met the planned level at 100% (see Figure 1). Tending exceeded the planned level by 46% due to the treatment of NSR areas. The shortfall in site preparation (24%) was due to the reduced level of harvest.

2.2 THE GROUND RULES

2.2.1. KNOWLEDGE AND FAMILIARITY WITH THE GROUND RULES AND THE AGREEMENT

For forest management and operational planning purposes, the Company has developed its own site classification system based on species composition, soil and terrain conditions and operability. The resulting eight different site descriptions are fully integrated into the silvicultural specifications and standards and Ground Rules and govern all activities on the Lake Nipigon Forest.

Based on discussions with Company staff both in the office and in the field, it was apparent that they had a thorough knowledge of the FMA and the Ground Rules.

2.2.2 CONFORMITY OF HARVEST AND SILVICULTURAL OPERATIONS WITH THE GROUND RULES

Approximately 50% of the Committee's time was spent in the field tracking, viewing, and discussing silvicultural and forest management activities with the Company and Ministry personnel responsible for the Lake Nipigon Forest. The Committee was able to visit on the ground 24 randomly selected sites, including a sample of all major silvicultural prescriptions carried out by the Company. This included, but was not limited to, FTG sites for spruce, pine, and poplar, stand conversion sites, NSR areas, budworm salvage sites, whole tree chipping sites, and areas ten years old that were prescribed for natural regeneration. One half day was spent in a helicopter viewing the FMA from the air.

The Company has identified and treated areas in the Lake Nipigon Forest where the application of intensive silvicultural practices has increased productivity above that which can be expected through a normal reforestation program and has replaced balsam fir with species less susceptible to budworm. This intensive forestry practice is one of several identified and written in the Ground Rules and practised throughout the five year term of the plan.

The Committee observed that the harvesting and regeneration practices as specified in the Ground Rules were carried out by the Company. Protection Forest Reserves (PFR) have been classified in the silvicultural Ground Rules with a separate management regime.

Modified harvest cutting in strips has been carried out intensively on the Lake Nipigon Forest. The Committee visited both older and more recent strip cuts and observed that the regeneration present met or exceeded the minimum stocking requirements after ten years.

The Committee noted that on sites left for natural regeneration as identified in Table 4.11 in the TMP, retreatment of understocked areas may be deferred by mutual agreement, until a ten year stocking assessment has been completed. Under the Ground Rules it is an obligation for the Company to do fifth year stocking assessments for all areas treated and/or harvested by the Company. Areas left for natural regeneration should be reported in Table 6.7.2 at the five and ten year interval basis but tracked separately. Consequently, the area of total treatment will then balance with the total area cutover during the period of the Ground Rules.

RECOMMENDATION : That areas prescribed for natural regeneration (as per Table 4.11) be reported at the time of harvest.

Free to Grow (FTG) standards and reporting methodology were first identified by the Company as insufficient with respect to post FTG treatments in the 1985-86 Annual Report. The Company and Designated Crown Representative (DCR) were able to agree on the results of a joint inspection of FTG areas. This resolved the problem at the local level but the decision from the Region was not received until February 1990. As a result, of the 8,333 hectares of FTG that were assessed, only 3,720 hectares were approved at the time of the review. This concern has been addressed in the new Ground Rules for 1991-96. It would appear that a degree of uncertainty still exists as to how FTG stands are to be placed back into the inventory.

RECOMMENDATION: That the Company and the Ministry track the landbase and ensure that FTG stands are placed back into the forest inventory as soon as possible.

2.2.3 CONFORMITY OF INVOICING WITH THE GROUND RULES

No invoice discrepancies were found in the field or office. The Company has a well-organized, systematic record keeping system that facilitated tracking and checking by the Committee members.

The Committee shares the concern expressed by the Company that funding commitments made by the Company in carrying out annual FMA obligations under the Agreement are not valid because the Ministry has not provided the final, required funding approval. Although there has never been an occasion when silvicultural operations were delayed due to funding, the Committee feels that with a short biological time frame in the spring, there exists a possibility that silvicultural operations such as seeding and tree planting could be jeopardized.

RECOMMENDATION: That the Ministry expedite approval of annual funding levels so that the silvicultural obligations of the Agreement are not compromised.

2.2.4 PREPARATION OF NEW GROUND RULES

The new Ground Rules have been submitted but not approved at the time of the review. The Ground Rules have incorporated many of the silvicultural developments that have evolved over the past ten years including the use of low cost mini-plug transplant stock, Forest Ecosystem Classification (FEC) vegetation and soil types, and tending requirements for stands that have been declared FTG.

2.3 HARVEST LEVELS, MAXIMUM ALLOWABLE DEPLETION, YIELDS AND WOOD FLOW

According to paragraph 20(1) of the Agreement, the Company has agreed to maintain its harvest on the Lake Nipigon Forest at a level between 90 percent and 110 percent of the adjusted maximum allowable depletion (MAD) for each working group. Using paragraph 10(2) of the Agreement, the Company may request the Ministry to authorize variations to the levels specified in the Agreement.

Paragraphs 20(3) and 20(4) of the Agreement provide for a rectification by the Agreement holder of any overcut or liquidated damages in the event of an under-cut on the Agreement area in a specified five year period. The Agreement holder may avoid liquidated damages through the declaration of timber surplus (paragraph 20(5)) to its needs in an approved Management Plan.

Table 2 shows a comparison of planned to actual depletions by area which indicates that the total depletion for the five-year period was 45% of the allowable depletion and 74% of the planned harvest (adjusted MAD). Most of the shortfall occurred in the hardwood working groups where combined depletion was just 34% of the plan compared to 104% for the combined total of the five conifer working groups. MacMillan Bloedel, the largest of the third party operators on the Lake Nipigon FMA, had planned to harvest 7,310 hectares of the poplar working group and 4,515 hectares of the birch working group but actually harvested only 2,469 hectares of poplar and 153 hectares of birch due to the shutdown of their Thunder Bay waferboard plant and the loss of a market for poplar pulpwood in late 1987. At the same time, Domtar's major supplier of hardwood chips cancelled delivery forcing Domtar to increase its harvest of hardwood on the FMA. Due to a limited woodroom capacity, the Red Rock mill could only handle this fibre in whole tree chip form. Domtar's whole tree chipper was originally scheduled to salvage balsam fir from budworm damaged areas. The switch to hardwood production resulted in a reduced harvest in balsam stands.

In addition, during the five year period under review the higher quality requirements of Domtar's newsprint customers reached a point where shorter fibre jack pine was no longer acceptable in the Red Rock process. Jack pine was used extensively by the Company in the production of kraft linerboard during the period under review but was primarily obtained in chip form. This led to a reduction of the harvest in the jack pine working group and PFR. Approximately 70% of the Red Rock mill fibre requirements are supplied by area sawmills, plywood plants, and logging companies in the form of roundwood and sawmill residues. This includes a long term agreement under which Great West Timber Ltd. harvests softwood sawlogs from the Domtar Armstrong Management Unit (MU) and the Armstrong Crown Management Unit (CMU) in exchange for softwood chips shipped from Great West's Thunder Bay sawmill to the Red Rock mill. The Armstrong CMU is under licence to Domtar. Given the cyclical nature of the industries involved, integration of wood flow is mutually beneficial, but complex. During the period under review, Domtar accepted 98% of planned deliveries from some 14 suppliers which reduced the harvest from the Lake Nipigon Forest.

The undercut of the jack pine working group is also the result of the scattered nature of the mature jack pine stands growing on the Lake Nipigon Forest. The size of the undercut is insignificant relative to the total harvest.

Considering the above factors, it is the opinion of the Committee that the undercut of the jackpine, balsam, PFR, poplar and birch working groups over the past five years was caused by circumstances beyond the control of the Company. It is noted that there is an apparent reluctance on the part of FMA agreement holders to request changes in the Operating Plan late in the period under review. This may be due to the fact that the amending process is complicated and time consuming. The Committee questions the need for a major amendment to the plan in the case of a reduction in planned harvest which does not result in any new impacts on areas of concern or the public interest in general.

According to subparagraph 26 of the Agreement, the Company is obligated to assist the Ministry to devise a plan of remedial action where forests on the Agreement area in site class III or better is destroyed by natural causes. During the period under review an extensive area of blowdown developed near Leopard Lake. An attempted harvest by the Company was abandoned after salvaging was deemed too dangerous for men and equipment. Fire suppression and past forestry practices have resulted in extensive stands dominated by balsam fir which is highly susceptible to mortality caused by the spruce budworm. The Company has increased its utilization of balsam fir and conducts stand conversion of budworm infested stands close to the mill.

In accordance with the Ground Rules (section 6.6.2, schedule C), the Company identified and recommended to the Ministry stands requiring protection from forest pests.

Examination of yield data showed that actual volume per hectare was 107% of the predicted volume for the 1981-86 period and 113% for the 1986-91 period. The Domtar yield predictions are based on operational cruising of 50% of the allocated stands and stand-by-stand determination of non-harvestable area. In addition pre-cut inspections are conducted to evaluate current stand conditions including any change in operability. Cruise data from all sources is entered into Domtar's data base management system ("ECOFOR"), which generates stand and stock tables for all stands on the licence. This data is updated every five years. This process should produce continuing and improved accuracy in future forecasts. The impact on yield of the budworm infestation, which is currently moderate to severe over the entire Lake Nipigon Forest, will require continuous monitoring.

The Company and the Ministry are commended for their success in integrating the fibre flow through exchanges between the Company mills, the area sawmills, veneer and waferboard plants, and the utilization of species surplus to the needs of the Company mills. As noted in the 1991-96 TMP, the MAD has been allocated for all forest units except the Balsam Fir working group and the Other Conifer working group. Both of these working groups are either being liquidated or depleted as encountered. In the new plan, fibre supplied from the FMA area will constitute 33% of the total requirements of the Domtar and MacMillan Bloedel mills as compared to 29% in previous periods.

TABLE 2
Depletion of Agreement Area for 1986-1991
(hectares)

FMA 500900
Lake Nipigon Forest
Domtar Inc.

Working Group	Maximum Allowable Depletion	Reserves	Declared Surplus	Adjusted MAD	Harvest	Bypass	Natural Depletion*	Actual Depletion
Spruce	17,015	368	5,437	11,210	10,536	3,546	1,817	12,353
Jack Pine	2,761	28	963	1,770	876	95	83	959
Balsam Fir	9,657	157	5,650	3,850	1,835	455	1,710	3,545
PFR	2,884	8	1,851	1,025	823	229	330	1,153
Other Conifer	479	8	471	0	69	64	549	618
Poplar	11,251	425	2,456	8,370	3,030	584	1,019	4,049
Birch	7,334	0	2,443	4,890	404	102	14	418
TOTAL	51,381	994	19,271	31,115	17,573	5,075	5,522	23,095

(1) Adjusted MAD = MAD - (Reserves + Surplus)

(2) Harvest = Gross Area Harvested including Bypass

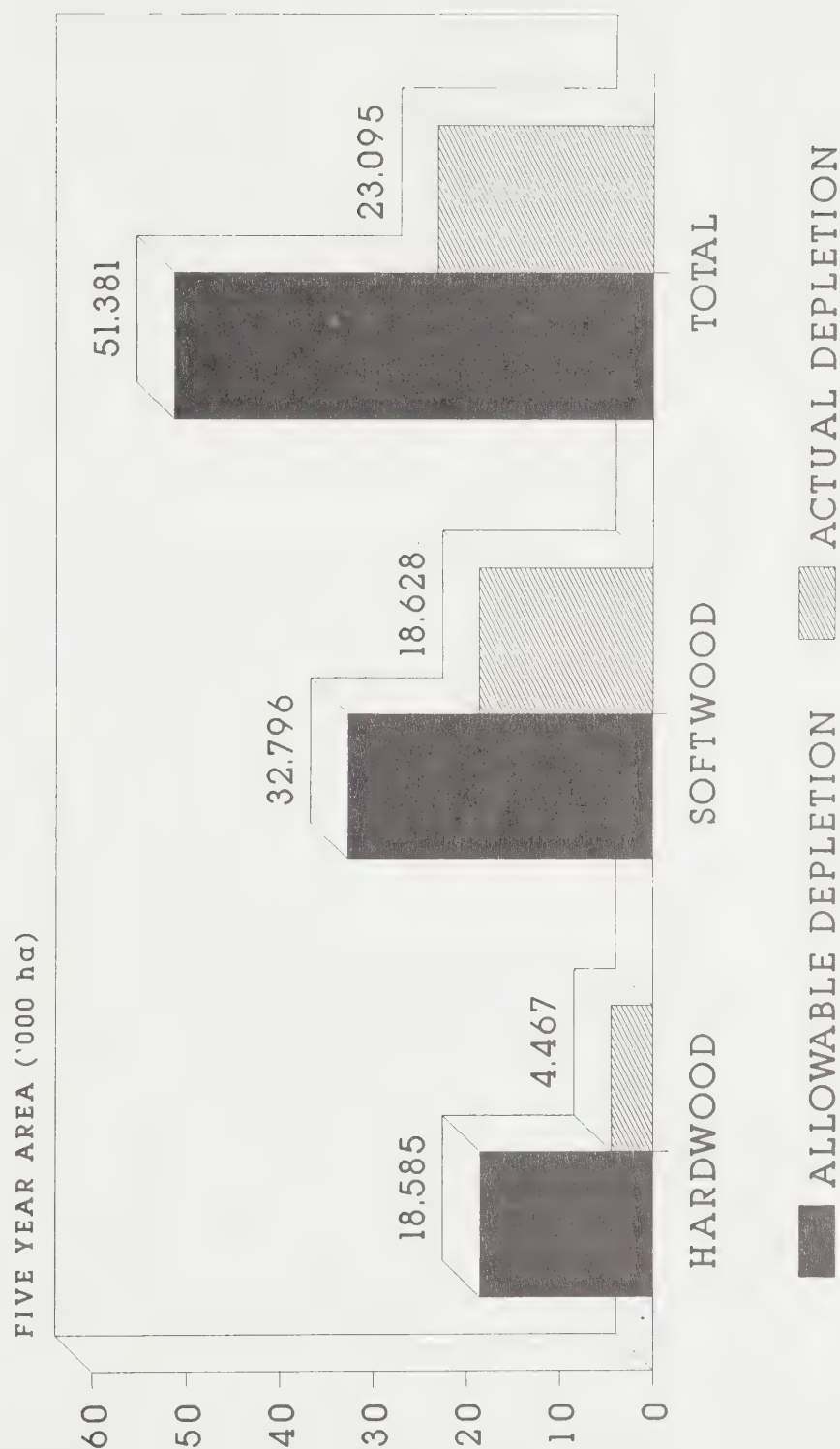
(3) Actual Depletion = Harvest + Reserves + Natural Depletion

Note: Figures represent 4 years actual data and final year estimated data

Source: 1986-91 Operating Plan, Annual Reports Table 6.1, 5th year Table 6.2

* natural depletion includes actual reserves of 4,316 hectares

FIGURE 2: COMPARISON OF 1986-1991
ALLOWABLE VS. ACTUAL DEPLETION
FMA 500900 LAKE NIPIGON FOREST



2.4 RELATIONSHIP BETWEEN HARVEST AND GROWTH AND FREE TO GROW ASSESSMENTS

After 10 years of FMA activity, 8,333 hectares have been assessed for FTG, but only 3,720 hectares have been approved. The difference, 4,613 hectares, is being held in abeyance until the FTG standards and reporting methodology have been clarified by the Ministry. This should be done as quickly as possible.

During the 1981-86 period, 10,702 hectares were harvested on the Lake Nipigon Forest. The Company and the Ministry together treated an equivalent area of 4,731 hectares and prescribed 1,434 hectares for natural regeneration. Approximately 1,802 hectares were utilized for roads and landings, and the remaining 2,735 hectares were left untreated. The Ground Rules implicitly require the Company to carry out fifth-year stocking assessments for all areas harvested. The Committee noted that 3,133 hectares of treated areas (treated by the Company) have received fifth year stocking assessments. The Company utilizes large scale (1:1000) low-level aerial photography to assess most projects. In some cases, field inspection is required to verify the aerial assessment, entailing a one year lag time. The shortage in stocking assessments of treated areas (460 hectares) will be made up in one year. The 2,735 hectares of untreated areas will require stocking surveys as soon as possible.

The Company has set the desired stocking level at 70% acceptable species. Of the stocking assessments completed during the 1986-91 period, 88% fell into the range of 60 - 80% stocking, the remaining 12% fell into the 51 - 60% range. These results exceed the minimum 40% provincial stocking standard.

Of the 8,137 hectares reported as natural regeneration, 6,113 hectares were reported in the final year (1990-91) of the ten year period. In the past Company practice has been to wait 5 to 10 years after the harvest to report natural regeneration and designate a working group. It is a requirement of the Ground Rules that these areas be reported at the time of harvest with an assigned working group or forest unit designation. Theoretically the working group or forest unit designation should be prescribed before the harvest.

RECOMMENDATION: That the prescriptions for areas of natural regeneration made at the time of harvest should designate the specific working group or forest unit.

FTG stands are placed back into the productive forest on the basis of stocking and FTG standards. No yield performance rating is assigned to a stand and therefore the Committee finds it difficult to comment on the relationship between harvest and growth. The Committee assumes that the FTG stands are contributing to the allowable cut, but the amount is not quantified. This makes it difficult to demonstrate that cutover yield performance is equal or in excess of historical natural yields. If differences in yield can be measured, an increase in allowable cut or a stumpage reduction may be warranted (refer to section 2.3 of the Agreement).

RECOMMENDATION: That the Company and Ministry develop a system of "benchmark" yield performance ratings and that the ratings be assigned to specific site and species classifications, so that stand or forest yield can be monitored.

2.5 NSR OBLIGATIONS

During the first ten years of the FMA, the Company has treated a total of 2,712 hectares of its 20 year commitment of 5,044 hectares, 649 hectares in the period under review. Of the remaining 2,332 hectares, 541 hectares is deemed to be beyond treatment due to destruction of the balsam fir by the spruce budworm. Another 347 hectares is considered non-treatable by reason of inclusion in water quality protection zones (AOCs). Other areas may have developed to the point where treatment is no longer necessary. In the 1991-96 TMP all areas identified as NSR classes 2 to 6 in the original 1984 NSR Survey will be considered as eligible for renewal and maintenance. In view of these circumstances the Committee agrees with the Company proposal for a joint Company/Ministry determination of what areas can readily be identified as reasonable to treat. Any theoretical outstanding balance would be offset by NSR areas treated as part of the current silvicultural operations.

2.6 ROAD CONSTRUCTION AND MAINTENANCE

Paragraph 31 of the Agreement provides for the Minister to pay, subject to a maximum amount per kilometre, for construction, reconstruction and maintenance of forest access roads on the Agreement area. To be eligible for payment, roads must be detailed in an AWS and constructed according to "Schedule E" of the Agreement.

In the Lake Nipigon Forest, major access is provided by Highway #11 in the north and along the western edge, Highway #17 on the southern boundary, and secondary Highways #580, #585, and #801 which cross the extremities of the forest. As well as the highways, there are approximately 600 km of all weather roads. With the addition of the FMA roads (408.3 kilometres over 10 years), the forest contains a well-developed access road system, except for the south-eastern portion along the Gravel River where extremes in topography have limited road construction and the harvesting of a concentration of old timber.

In the first five years of the FMA, no primary roads were constructed but 288 kilometres of secondary roads were built and 451 kilometres of roads were maintained. The FMA road program for 1986-1991 was reduced to less than half of the previous level. FMA funding was used to construct 120.3 kilometres of roads (Table 1; including an airstrip of 0.9 kilometres), only 55.1% of the kilometres planned for the period (Figure 1). The Company built an additional 6.9 kilometres of primary roads and 35.0 kilometres of secondary roads at their own expense. This increased the level of achievement to 74.3% (Figure 1). According to the Company, shortfalls in FMA road construction, and concurrently in road maintenance (67.6% of the planned level), resulted primarily from a reduction of FMA road funding. Third parties operated mainly in the southern part of the Lake Nipigon Forest and used existing roads. However, a third party built 5.3 km of the secondary roads funded in the period under review.

Road construction in many parts of the Lake Nipigon Forest is difficult and costly due to extremely rugged terrain and shallow soils. The Company estimated that road funding covered only half of the total cost of construction for many of the primary roads.

Consistent with the objectives of FMA road funding, roads constructed during 1986-1991 were used mainly to provide access to the oldest stands of timber. For example, almost half of the harvest in the spruce forest unit, one-third in jack pine, and three-quarters of the harvest of the conifer PFR forest unit was in stands 121+ years of age, well past rotation age. The Operating Plan for the period shows that stands of this age comprised 33%, 4%, and 25%, respectively, of the available forest in those forest units.

The Committee used a random sample of 15 of the 42 roads which received funding in 1986-1991 to determine if planned and actual locations corresponded. Locations shown on the Operating Plan maps were compared to those transferred from aerial photographs onto the depletion maps. Portions of three roads deviated by more than 600 m from their planned locations, but there were legitimate reasons for the variance in two cases. For the remaining case, an unexplained 680 m shift in the road (MR6) was not covered by an amendment. However, no Areas of Concern (AOCs) were affected. The Committee recognizes that rough terrain complicates road location in the field but believes that significant deviations from the approved plan must be reported to the Ministry prior to construction to ensure that the public has an opportunity to comment. The corridor approach used for the new TMP will help to refine road locations early.

During 1986-1991, roads eligible for FMA funding were inspected jointly by representatives from the Company and the Ministry and discrepancies were resolved before invoicing. The Committee was impressed by the high quality of the roads observed during the field inspections.

2.7 COMPANY RECORDS

During the period under review, the Company delineated depletions on aerial photographs, transferred them to sepiamaps of the same scale, then measured the depleted areas with an electronic planimeter. Depletions were recorded under the original Forest Resource Inventory stand numbers in a computer program which subdivided each depletion into the categories: clear cut, strip cut, partial cut, bypass, reserve, modified cut, burn, insect and disease. Cross-referencing of depletions to later renewal treatments on the same piece of ground will be possible once all depletion and silvicultural data have been digitized for use in the Company's Geographic Information System (GIS).

Since the beginning of the FMA, the Company has used its own computerized Silvicultural Information System (SIS) to record renewal activities and to produce the SIS cards required by the Ministry for each renewal operation. The Company keeps on hand two complete hard copies (one for the office and one for the field) of the SIS cards with their accompanying maps and survival and stocking assessments. A copy of the SIS cards is also kept by the Ministry. On the SIS cards, each silvicultural project is given its own code number and is cross-referenced to other renewal treatments on the same piece of ground. Presently, the Company is installing a new version of their SIS program which will be linked to the GIS system through ECOFOR, the Company's own comprehensive data base management system. When fully operational, ECOFOR will enable staff to update and manipulate silvicultural, depletion, and forest inventory data bases and to produce maps and reports quickly.

The Company's investment in record-keeping systems attests to its commitment to effective and efficient management of the Lake Nipigon Forest.

2.8 ANNUAL REPORTS

The Company has done an excellent job of record keeping. All Annual Reports were submitted early or on time. The DCR found very few errors during the period under review. Investigations by the Committee confirmed that the reports were accurate; individual and accumulated totals for road construction and silvicultural work corresponded well among Annual Reports and in the invoices.

Annual Reports consisted of the required tables as well as several additional tables which provided much more detail on harvest and renewal operations (e.g., a Mechanical Site Preparation Report, a Natural Regeneration Report). A covering letter enclosed with the report served as a permanent record of the submission date. Usually, there was no formal acknowledgement from the Ministry that the reports had been checked and approved.

The Ground Rules of the Agreement (Section 4 of Schedule C) specify that details of major deviations from planned harvest and silvicultural operations will be discussed in the Annual Report. However, this was not done.

RECOMMENDATION: That Annual Reports contain a brief descriptive section summarizing the year's highlights including an explanation for major deviations from target levels of achievement in harvesting and silviculture, amendments, and other significant events. In addition, that the Ministry formally acknowledge the approval of Annual Reports for completeness and accuracy.

A short descriptive report would serve as supporting documentation for the five-year summaries and would aid the Company in the preparation of portions of the next Timber Management Plan (i.e., Report on Past Forest Operations).

2.9 INTEGRATION WITH OTHER FOREST USES

Section 9 of the Ground Rules of the Agreement, entitled Integration of Other Resource Values in Timber Management, explains how the Company and the Ministry will manage certain lands, designated as Areas of Concern (AOCs; also known as Modified Management Areas), for uses other than or in addition to timber production.

The Operating Plan for 1986-1991 listed 101 AOCs which were identified by the Ministry in the Company's proposed areas of operations; additional AOCs were identified in the AWSs. The majority (94%) of the AOCs in the Operating Plan dealt with fisheries concerns. Two AOCs protected significant waterfowl stop-over areas and one protected locally rare plants. No eagle, osprey, or heron nesting areas were identified in the Operating Plan. Only one AOC pertained to moose habitat. However, a minor amendment to the Operating Plan was initiated by the Ministry in 1988 to allow

implementation of the Timber Management Guidelines for the Provision of Moose Habitat. This amendment resulted in the establishment of moose corridors where necessary to break up the cuts.

In the Operating Plan, AOCs ranged from 120 meters to 300 meters in width, and most were divided into two zones. In the inner zone (nearest the value to be protected) which ranged from 30-60 meters in width, there were three main prescriptions: harvesting totally restricted (50% of the cases), harvesting deferred for an unspecified length of time (23%), or selective cutting allowed (22%). The outer zone of the AOC ranged from 30-140 meters in width and permitted removal of only 50% of the timber, usually in strips or blocks, along the length of the AOC. Few of these creative treatments around shorelines were actually performed. In most cases the prescriptions were simplified in the AWSs into smaller full reserves. The Company maintained that it was too costly to lay out complex patterns considering the small amounts of wood involved.

During field inspections, the Committee noted that although most lakes and streams were encircled by full reserves, the Ministry permitted cutting to the shoreline around a few of the smaller lakes and creeks in the first five years of the FMA, and perhaps in the early years of the period under review. This produced a landscape more similar to that expected after natural wildfire (cleared of trees on some shorelines and not others) and likely resulted in a greater diversity of wildlife habitat around water courses on the FMA area than could have been achieved with full reserves alone. Cutting to the lake shore in some areas would benefit species such as beavers which require early successional habitat close to water, while the retention of reserves would protect large trees with potential for use by nesting eagles and ospreys.

The Company and third parties have done a good job of respecting reserve boundaries. Only three trespasses occurred in 1986-1991, one by Domtar (1986) and two by third party operators (both in 1987). None of the trespasses were greater than one hectare in area.

During the period under review, harvesting operations were concentrated in four locations; planned cuts for 1991-1996 are more widely dispersed. It was clear from field inspections that the broken terrain and natural interspersion of different forest units of various age confined the cuts to small, irregular shapes in parts of the Lake Nipigon Forest. In other areas effective cut size was reduced by wildlife corridors and leave blocks of unmerchantable timber. In the new TMP the Company is planning selection cuts in some of the corridors. Most of the cuts contained abundant snags (mainly white birch) which will benefit some cavity-nesting wildlife.

Since implementation of the Environmental Guidelines for Access Roads and Water Crossings in the Lake Nipigon Forest, the cost of water crossings to the Company has increased. Despite this, the Company replaced at their own expense many old crossings installed before the guidelines were in force. Field inspections showed that the updated crossings were very well handled. Inclement weather compelled the Committee to travel by road rather than air during most site visits and thereby limited the number of newer crossing installations observed. The crossings observed suggested that the Company is working to minimize grubbing, to reduce the width of the cleared right-of-way near water courses, and to continue their excellent practice of using rip-rap to stabilize banks. They have also attempted to reduce silty inflow by placing slash in ditches and running ditches into the woods rather than directly into streams. Ministry staff reported that the Company co-operated well in remedial work at old crossings and in modifying their installation procedures to suit the guidelines at new crossings.

Compared with some other FMA areas, the Lake Nipigon Forest has been developed relatively little for recreation. There are few lakes with outpost camps or remote cottages and thus, there have been few conflicts with other users. Generally, resolution of these conflicts has been handled by the Ministry rather than the Company. During 1986-1991, outpost camps on only one lake (Trapnarrows) were affected by harvesting operations. In that area the main access road is gated and all roads built within 1.6 kilometres of the lake are to be destroyed once silvicultural operations are complete. One of the greatest demands by other user groups in the Lake Nipigon Forest is for fuel wood cutting permits. Annually, the Company and the Ministry respond to many requests by individuals for permission to cut fuel wood on the Agreement area.

In an effort to inform the public of its forest management activities, Company staff have spoken to town councils and school classes and have organized numerous personal field tours. The Ministry with some assistance from the Company have erected signs outlining silvicultural projects in the FMA area. In addition, on areas funded by the Ministry, the Company conducted several community plants, including the Boy Scouts during the period under review. Both the Company and third parties have seeded old roads or landings with clover for wildlife.

3. MAINTENANCE OF PRODUCTIVITY

Figure 3 makes a comparison between area harvested and area regenerated during the first 10 years of the FMA. This can truly be called a phase in and tooling up period. Although the records are not complete, particularly with respect to natural regeneration, the percentage of the harvested area that was reported as renewed has increased from 47% for the 1981-86 period to 99% (Table 1) for the 1986-91 period for an overall total of 75% for the first 10 years of the FMA.. A total of 96% of the 1991-96 harvest level has been targeted for renewal during the same period. This may be exceeded if associated backlog areas can be incorporated.

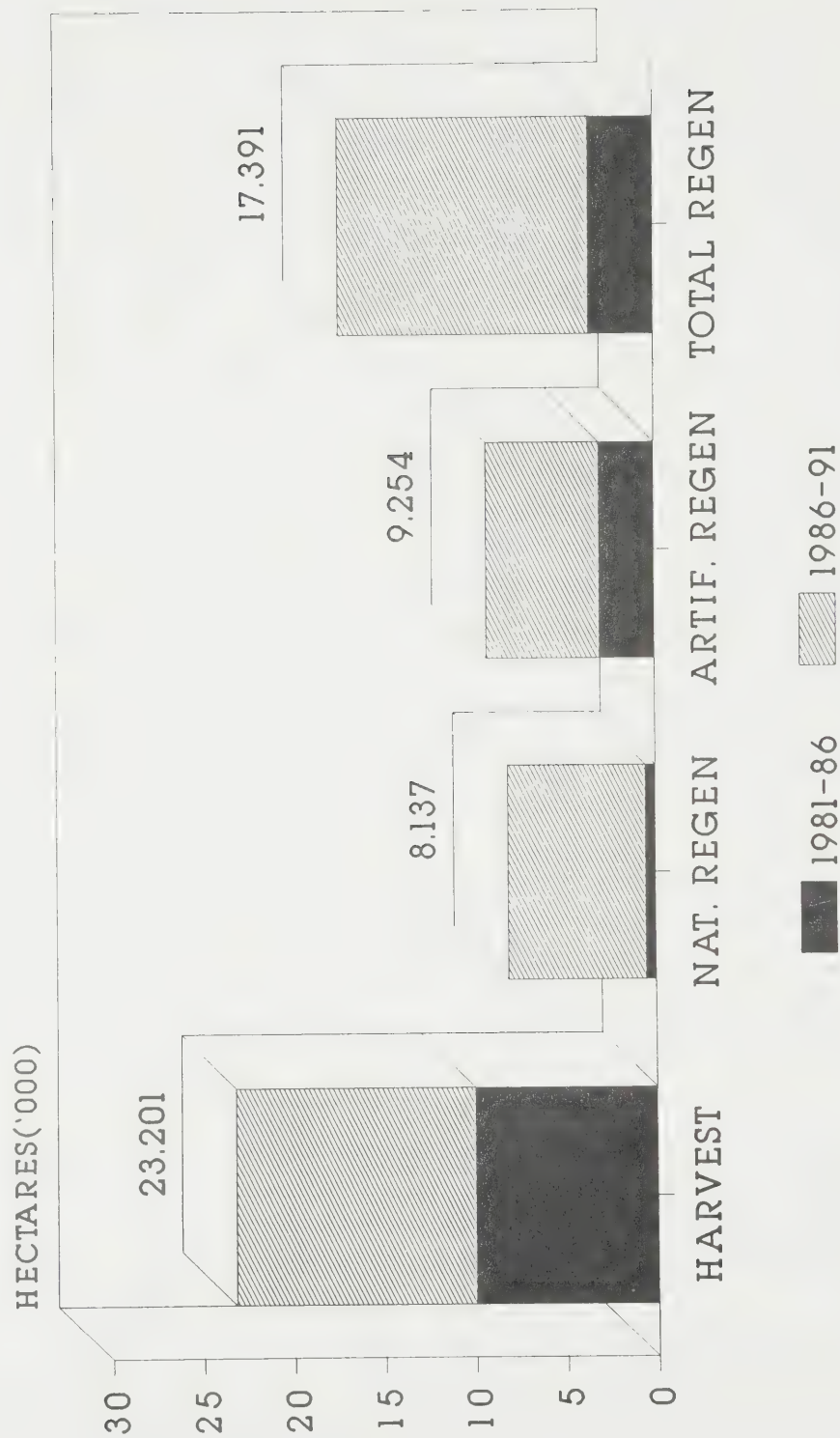
During the first 10 years of the FMA there has been a reduction in the area that remains available for timber production by reason of the dedication of forest areas for the protection of non-timber values as well as for roads, landings, and bypass areas. Based upon recent experience the Company forecasts the following depletion by area for the 1991-96 period;

<u>Category</u>	<u>% of Total Area</u>
Allocated Area	100.0
Reserves and Modified *	21.2
Planned Harvest	57.3
Non-harvestable (inoperable, isolated)	21.4

* modified includes areas left uncut to provide moose habitat

All of the above categories are subject to change. Markets for forest products are cyclical. The portion of the area being designated as reserves and modified has been on an upward trend. The impact of the spruce budworm could cause a reduction in yields per hectare, particularly in stands of balsam fir which are a significant component in certain age classes in the Lake Nipigon Forest.

FIGURE 3: 1981-1991
HARVEST AND REGENERATION
FMA 500900 LAKE NIPIGON FOREST



The Company has conducted a wood supply analysis for the current land base using the NORMAN Wood Supply Model, which confirms that the area based MAD strategies calculated for the individual working groups can support the sustained yield softwood target well into the long term (50+ years).

The shrinking land base available for timber production plus the acknowledged limits to funding for artificial regeneration have forced many FMA companies to reconsider the natural regeneration option. Domtar, like several other FMA companies was reluctant to include natural regeneration targets in previous plans but has now incorporated them as a viable alternative on certain sites. A prerequisite of active management for natural regeneration is an early identification of the specific areas, preferably immediately before harvest, even if the initial working group designation is a temporary one, subject to revision as a result of a subsequent stocking, a post harvest survey, or FTG assessment. To accommodate the inevitable return of two or more acceptable species on certain sites, the reduction in herbicide use, and the virtual impossibility of predicting what the ultimate distribution of species may be, it will be necessary to add a mixed wood group to the list of single species groups. New criteria will be required for the inventory, stocking, and FTG assessment of the new working group.

As noted in Section 5.0 - "Company Forest Management Activities Conducted Beyond the Obligations Under the Agreement", the Company continues to be involved in tree improvement research and trials targeted to produce faster growth and higher yields from future plantations. The Company continues to press for protective treatment of stands of young balsam fir which are under attack by the spruce budworm. Maintenance of productivity in the future, presuming continued reduction in the landbase, may be dependent on such measures and upon more intensive management of areas renewed by artificial and natural regeneration.

4. IMPLEMENTATION OF THE RECOMMENDATIONS OF THE FIRST FIVE-YEAR REVIEW

The recommendations resulting from the first five-year review of operations of the Company in the Lake Nipigon Forest have all been addressed, however not all of the problems and concerns that led to the recommendations have been completely resolved. The Committee urges the Ministry and the Company to continue to work together to ensure that these matters are resolved.

The recommendations from the first five-year review and the status of their implementation is as follows:

That the Minister of Natural Resources extend Forest Management Agreement #500900 for an additional five-year term.

The FMA has been extended.

That Domtar in concert with the MNR Regional Office, review and revise, as appropriate, the stated objectives for the Lake Nipigon Forest by September 1, 1987.

The objectives were reviewed and agreed upon by the Company, the DCR, and the Regional Timber Management Planning Specialist by September, 1987. The reworded objectives were included in the approved 1991-2011 TMP for the Lake Nipigon Forest.

That the MNR Regional office and Domtar agree on a method for handling small areas of depletable bypass, that the decisions as to what constitutes allowable depletion bypass be based on the mutual agreement of the company and the District, and that this process be incorporated into the ground rules by April 1, 1987.

A Ministry policy on bypass (TS 04 09 01) was issued on November 16, 1988 defining the application, criteria, determination and jurisdiction of bypass areas.

That plans for third-party operators include the same level of detail as its own operational plans, that allocation of stands in the hardwood working group be brought in line with potential use, and that the company continue to attempt to improve utilization of the hardwood working group.

Mechanization of all woodland operations including whole tree chipping has improved utilization of hardwood working group stands. Market needs and changing technology will continue to be the primary determinant for utilization of hardwood species, both by the Company and third party operators.

That Domtar actively pursue increasing utilization of balsam fir in its mill furnish in anticipation of losses to spruce budworm and in line with its stated position of a future shortfall of conifer on the Lake Nipigon Forest.

The Company and the Ministry have developed a budworm/balsam fir strategy which has been implemented on the Lake Nipigon Forest. Balsam fir forms a high proportion of the growing stock of the Lake Nipigon Forest and will require continued protection.

That Domtar be commended for and encouraged to continue to use riprapping and seeding of water crossings as part of its standard road building techniques.

The Company continues to employ these techniques at crossings.

5. COMPANY FOREST MANAGEMENT ACTIVITIES CONDUCTED BEYOND THE OBLIGATIONS UNDER THE AGREEMENT

The Company has been involved in developing the operational use of modified harvest cutting as a silvicultural tool for over 15 years. During the period of this review, additional Company trials were conducted to investigate the need to revise the technique to suit the mechanized logging system which is now in common use on the FMA area. To date the Company has absorbed the additional operating costs associated with modified harvesting.

The Company has invested in a Geographic Information System (GIS) to provide record keeping, data analysis, and mapping capabilities to service its forest management program. Cruise data accumulated since 1982 has been entered into a Company-developed computerized forest inventory system, which generates stand and stock tables for all stands in the FMA.

Domtar continues to publish and distribute a variety of brochures describing its mill and forest operations including statements of its forest management policy, pictorial descriptions of its logging and forest management techniques and its efforts to accommodate the outdoor activities of the public. The public education aspect of such material is of benefit generally in earning support for the FMA undertaking.

During the 1986-91 plan period, trials were initiated by the Company to compare the performance of conventional paper pot planting stock with that of other types of stock and alternative regeneration systems. These trials included seed shelters and mini-plugs as possible options on shallow soil sites.

The Company is a member of the newly formed Lake Nipigon East Zonal Tree Improvement Co-operative. The Company will participate with the Ministry in applied tree improvement programs on the Lake Nipigon Forest.

The Company organized internal training courses in "Water Crossing Designated Construction" for its supervisory staff and equipment operators. As noted in Section 2.9 - "Integration With Other Forest Uses", the Company reconstructed several water crossings to replace unsafe timber bridges entirely at its own expense.

6. STAKEHOLDER CONCERNS

6.1 PUBLIC CONCERNS

On April 10, 1991 a Public Concern Meeting was held in Nipigon. The review co-ordinator, John M. Duncanson chaired the meeting. Approximately 400 Notices were sent out prior to the meeting to various interested parties as well as published in the local newspapers, 15 people attended the meeting.

Following a description of the FMA review process by the chairman, the floor was opened to discussion and expression of concerns.

There were two individuals who presented concerns regarding the operations of Domtar on the Lake Nipigon Forest. (Public stakeholder concerns were addressed and the Review Committee comments are shown in italics).

- i) A consulting forester from Beardmore had four concerns;
 - Five days of field inspection by the review team during an FMA review was not adequate time to properly review the FMA area.

By careful selection of field sites, inspection of randomly selected files, and many hours of analysis and review prior to the field inspection, the Committee is confident that the five days of field inspection is adequate.

- The silvicultural prescriptions in the TMP (ground rules) were not adhered to.

The Company did follow the silvicultural prescriptions (refer to Section 2.2.2 -"Conformity of Harvest and Silvicultural Operations with the Ground Rules")

- Protection and production forest reserves make up a large portion of the Lake Nipigon FMA - yet these sensitive areas are prescribed for clearcut.

The Company designed a separate silvicultural prescription for potentially sensitive areas (refer to Section 2.2.2 -"Conformity of Harvest and Silvicultural Operations with the Ground Rules". The Committee visited several PFR sites in which the clearcut prescription was strip or block cutting and observed that adequate regeneration had been established.

- Many clearcut areas are planted on sites that should not be planted - recommended that the review committee look carefully at these sites and inspect.

The Committee inspected several sites that had been artificially regenerated. The Company continues to study a variety of silvicultural treatments on these sites.

- ii) A gentleman who identified himself as the Reeve for Beardmore had six concerns;

- Expressed support for the continued staffing by MNR at Macdiarmid.
- Limited government funding for road maintenance in the Lake Nipigon Forest FMA.
- Cut wood left behind in the bush - suggested there should be a time period in which the company should be forced to remove any cut wood.
- The practice of prescribed burns - questioned whether the cost is actually greater than the benefit.
- Incidental harvesting i.e. individuals should have a more expedient procedure in which to obtain permits to cut wood.
- Company wood "marshalling points" be better positioned and co-ordinated.

There are no immediate answers to these concerns. The Ministry and Company should continue to encourage the public to report specific problems and maintain communication to inform the parties of new developments or a resolution of concerns.

6.2 COMPANY CONCERNS

On June 24, 1991 the Review Committee met with Company officials to discuss their concerns regarding the management of the Lake Nipigon Forest. The Company provided a list of their concerns and comments in writing. The following are the Company's concerns;

- i) NSR Lands: The Company is concerned that it may not be able to meet its obligation to treat the remaining portion of NSR lands over the next ten years. The Ministry and the Company should jointly determine what is reasonable to treat.
- ii) FMA Funding: During the period of the last plan the FMA provided for the funding of road construction and silvicultural activities. During this time, funding cutbacks resulted in the Company constructing 6.9 km of primary road and 35.0 km of secondary roads at their own expense.

Recently there has been pressure to rationalize and reduce silvicultural activities. The Company is concerned about the long term impact of reducing timber management activities because of a lack of funds.

Also of concern is the present process of allocation and notification of funding in a timely and effective manner. Activities are often initiated or completed by the Company in good faith prior to official notification by the Ministry,. The Company is further disturbed by notification of program constraints after their projects have begun.

- iii) MNR Staff: The Company would like to commend the Ministry for their continuity of staff. The Designated Crown Representative has been on the Lake Nipigon Forest for most of the last five year term. Consistency and liaison are key to the successful implementation of an FMA.
- iv) Herbicide Use: Domtar is supportive of the Ministry's recent Vegetative Management Alternatives Program. The Company is concerned however, over the Ministry decision to limit aerial application of approved, registered herbicides.
The Company is concerned about these reductions in the absence of economical, biological alternatives.
- v) Lack of Critical Fish Habitat Inventory Data: The lack of information on fish communities imposes additional constraints on timber management activities on the Lake Nipigon Forest. Without this critical fish habitat information, Areas of Concern of maximum width must be applied resulting in area lost to the Company for timber harvesting. A lack of funding has been cited as one of the main reasons the Ministry has not been able to collect this data.
- vi) Stewardship: Under the present FMA tenure system, the Ministry and its staff are constantly auditing activities conducted by the FMA holder. The FMA agreement holder should be able to implement forest management activities (road construction, harvesting, renewal and maintenance) under an approved TMP utilizing implementation manuals. The FMA review

process is the mechanism the Ministry uses to judge performance. Current practices emphasize the achievement of targets rather than objectives, thereby reducing the role of the FMA holder to one of contractor rather than one of steward.

- vii) Implementation of Guidelines: The Company is concerned over the potential erosion of the MAD landbase as a result of unilateral policies, guidelines and procedures adopted by the Ministry during this last five year term. Domtar maintains that guidelines must be flexible in their implementation, be based on sound scientific knowledge and should incorporate the scope of societal needs.

The Company and Ministry staff have been working together in developing a mutually acceptable, common sense approach in applying these guidelines specific to the Lake Nipigon Forest.

- viii) Processes and Procedures: Domtar feels that the intent of the FMA, to increase the level of forest management on the licence areas, has achieved its objective over the last ten years. However, the processes of policy have not kept up to date (i.e., there is no well defined procedure for landbase tracking or FTG). The Company recommends that FMA Agreement Holders and the Ministry as a priority should jointly discuss operating procedures that meet the needs of both parties.

6.3 MINISTRY CONCERNS

On June 26, 1991 the Review Committee met with Ministry staff to discuss their concerns regarding the management of the Lake Nipigon Forest. The Ministry provided a list of their concerns and comments in writing. The following are the Ministry's concerns;

- i) The Company should place some importance on resolving user group conflicts internally, instead of relying on the Ministry to resolve their problems.
- ii) With regard to the moose habitat guidelines, the Ministry perceives that the Company is concerned that quite often maximum AOCs are prescribed because habitat information is not available.
- iii) The Ministry have been limited in their ability to properly monitor the Company for compliance. The Ministry staff feel that the Company has not cooperated to the fullest.

7. CONCLUSIONS AND RECOMMENDATIONS

The Committee is satisfied that the obligations of the Company have been satisfactorily performed by the Company during the five-year term under review. The Committee also believes that the recommendations of the first five-year review have been adequately addressed.

The Company's commitment to efficient forest management is exemplified by their state-of-the-art record keeping system, and the timely submission of plans and accurate reports. However, similar to other FMAs in the Western Boreal Forest Region, the Company should record those areas that are prescribed for natural regeneration at the time of harvest. This must be done to ensure that the status of the Lake Nipigon Forest is known throughout the operating period.

The Company has demonstrated its dedication to good stewardship and sound management on the Lake Nipigon Forest. For example, an area equal to 99% of the area harvested was regenerated in the period from 1986-1991. The Committee commends the Company for using modern techniques to upgrade old stream crossings and to ensure that new crossings adequately protect water quality.

The Company and the Ministry generally work well together but are encouraged to pursue a more interactive approach to their joint management and stewardship. Both parties should emphasize the accumulation of knowledge to support agreement on objectives and the prescriptions designed to achieve them.

RECOMMENDATION No. 1: That the Minister extend the remaining periods of FMA 500900 by a further term of five consecutive years to March 31, 2011.

RECOMMENDATION No. 2: That areas prescribed for natural regeneration be reported at the time of harvest.

RECOMMENDATION NO. 3: That the Company track the landbase and ensure that FTG stands are placed back into the forest inventory as soon as possible.

RECOMMENDATION No. 4: That the Ministry expedite approval of annual funding levels so that the silvicultural obligations of the Agreement are not compromised.

RECOMMENDATION No. 5: That the prescriptions for areas of natural regeneration made at the time of harvest should designate the specific working group or forest unit.

RECOMMENDATION No. 6: That the Company and Ministry develop a system of "benchmark" yield performance ratings and that the ratings be assigned to specific site and species classifications, so that stand or forest yield can be monitored.

RECOMMENDATION No. 7: That Annual Reports contain a brief descriptive section summarizing the year's highlights including an explanation for major deviations from target levels of achievement in harvesting and silviculture, amendments, and other significant events. In addition, that the Ministry formally acknowledge the approval of Annual Reports for completeness and accuracy.

8. REVIEW COMMITTEE STATEMENT

We have examined the performance of Domtar Inc. Inc. as pertaining to its obligations under the Forest Management Agreement No. 500900 (Lake Nipigon Forest) during the past five year period ended March 31, 1991.

In our opinion, the Company has conformed to the rules as outlined in the Forest Management Agreement.

signed The Review Committee

The Review Committee

**FIVE-YEAR REVIEW
CANADIAN PACIFIC FOREST PRODUCTS LIMITED**

**BLACK STURGEON FOREST
FMA 502900
1986-1991**

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1. INTRODUCTION

1.1 PURPOSE OF THE REVIEW

The Ministry of Natural Resources (the "Ministry") and Canadian Pacific Forest Products Limited (the "Company") signed a Forest Management Agreement or FMA (the "Agreement") in 1986. This Agreement, number 502900, was designated the **BLACK STURGEON FOREST**. The primary purpose of this Agreement was to provide a continuous supply of forest products to the Company's mill at Thunder Bay, Ontario and to ensure that the forests of the Black Sturgeon Forest are harvested and regenerated to produce successive crops of timber on a sustained yield basis.

This review of the first five consecutive years of the Agreement was conducted on the Black Sturgeon Forest to determine whether the obligations of the Company under the Agreement have been satisfactorily performed and to recommend to the Minister of Natural Resources whether the remaining period of the Agreement should be extended for a further term of five years.

1.2 THE REVIEW COMMITTEE

The review was carried out by a committee (the "Committee"), engaged by Duncanson Investment Research Inc. under contract with the Ministry. The Committee members were:

Mr. John M. Duncanson, B.Sc.F., R.P.F., Review Coordinator
- President, Duncanson Investment Research Inc.
- independent financial analyst specializing in the forest industry

Mr. Garnet W. Bell, B.Sc.F., R.P.F., Forestry Consultant, Committee Chairman
- forestry specialist - 38 years in Boreal Forest management
- Vice-President Woodlands (Retired), Spruce Falls Power & Paper Co.

Ms. Kandyd Szuba, B.Sc.F., Ph.D., Private Consulting Biologist.
- wildlife specialist - 14 years researching the habitat requirements of birds and other wildlife of the Boreal Forest.

Mr. Charles J. Heeney, B.Sc.F., Dip R.M., Private Consulting Silviculturalist
- silvicultural specialist - 35 years in forest management and silviculture
- Supervisor, Forest Production and Control (Retired) OMNR

1.3 TASKS OF THE REVIEW COMMITTEE

The Committee's assignment was to undertake a fair and objective review of Canadian Pacific Forest Products Limited's performance on the Black Sturgeon Forest during its first five-year term vis-a-vis its obligations under Forest Management Agreement 502900, as specified in detail in Appendix B - "Terms of Reference for the First Fifth-Year Review of a Forest Management

Agreement", and to make recommendations to the Ministry on the extension of the Agreement's term according to the "evergreen" section of the Agreement (Section 14, Paragraph 29).

The review was conducted by:

- examining the Management, Operating, and Annual Plans, and the Annual Reports prepared by the Company with regard to their submission dates and their acceptability to the Ministry,
- inspecting the depletion, silvicultural and access road records for adequacy and for conformity with the management plans and ground rules of the Agreement,
- comparing the levels of harvest and treatment of not satisfactorily regenerated (NSR) lands outlined in the Annual Reports with the levels required by provisions of the Agreement,
- selecting and field inspecting harvest cuts, silvicultural projects and road construction typical of the techniques employed on the forest for conformity with the Agreement holder's records and for field applications of the ground rules,
- determining the degree to which other forest users and other forest values are accommodated in management planning and in field operations,
- meeting with Company and Ministry district staff to identify problem areas and Agreement concerns on the part of either party, and,
- meeting with other users of the forest in and adjacent to the Agreement area, i.e. local cottagers, hunting and fishing groups, native groups, and identifying with them problem areas or concerns on the part of the Public with respect to the Agreement, its administration, and the working relationship with the Company and Ministry Staff.
- examining and reporting if overall, the FMA objectives, to manage Crown timber on a sustained yield basis and supply the mills identified in the Agreement through the integration of harvest, renewal and maintenance activities are being met.

2. PROCEDURES AND FINDINGS

2.1 MANAGEMENT PLANNING

2.1.1 THE PREPARATION AND SUBMISSION OF PLANS

The Agreement requires the Company to prepare a Timber Management Plan (TMP), Annual Work Schedules (AWSs) and Annual Reports. These plans and reports must be prepared and submitted to the Ministry according to the time frame specified in the Agreement and in accordance with the planning manual approved by the Ministry for this purpose.

The Forest Management Agreement for the Black Sturgeon Forest was signed on July 17, 1986. The TMP (1986-2006) was due on January 17, 1987 and was prepared in accordance with the Timber Management Planning Manual for Crown Lands in Ontario (1986). A first draft of the TMP was submitted on October 31, 1986 for Ministry comment and the complete plan was submitted on March 2, 1987. The Plan was approved on March 31, 1987.

Five Annual Work Schedules were prepared and submitted on time. Only one AWS (1987-88) was approved by the Ministry by the required date (March 31). The 1986-87 AWS was approved on April 22, 1986 and the last three were approved during the first week of April in 1988, 1989, and 1990. The TMP for the 1991-96 period was prepared, submitted, and approved on time.

The Committee was pleased to note that for the period under review the Company has not only used the new TMP process for the first time but has prepared the required plans on time, thus demonstrating an ability to successfully resolve planning issues with the Ministry and other users of the Forest.

2.1.2 PLAN IMPLEMENTATION

The Agreement requires that the Company conduct its operations in accordance with the approved Management and Operating Plans and AWSs. The accomplishments of the Company in silvicultural operations and road construction are summarized in Table 1.

The Committee has examined Company planning documents and performance records supplemented by ground inspections for harvest cut, road construction, and silvicultural operations. The comparison of actual achievement with planned levels is illustrated in Figure 1, showing that the Company harvested only 34% of the area approved for harvest, but, met or exceeded all silvicultural targets for the period under review. (see Section 2.3 - "Harvest Levels, Maximum Allowable Depletion, Yields and Wood Flow" for more detail).

More details on silvicultural accomplishment are found in Section 2.2.2 - "Conformity of Harvest and Silvicultural Operations with the Ground Rules".

The harvest cut and road construction records of the Company conform generally to the area allocated for harvest and road locations specified in the documents. Achievements in road construction exceeded the plan, however FMA funded roads accounted for only 43% of the road plan. Maps of actual road location showed all but one road fell within the approved corridors. The Hornick Road, built by a third party operator, deviated significantly from the approved corridor due to difficult terrain. No plan amendment was requested for this deviation.

During the term of this review there were sixteen proposed amendments to the TMP. Fifteen amendments in all were approved, nine administrative, four minor, and two major. The major amendments involved additional allocation and road requirements; the minor amendments dealt with additional area and the upgrading of a secondary road. The administrative amendments dealt with wildlife, tertiary roads, and "squaring off" portions of allocated stands. The Company noted that these amendments have placed a significant additional work load on both the Ministry and Company staff.

TABLE 1

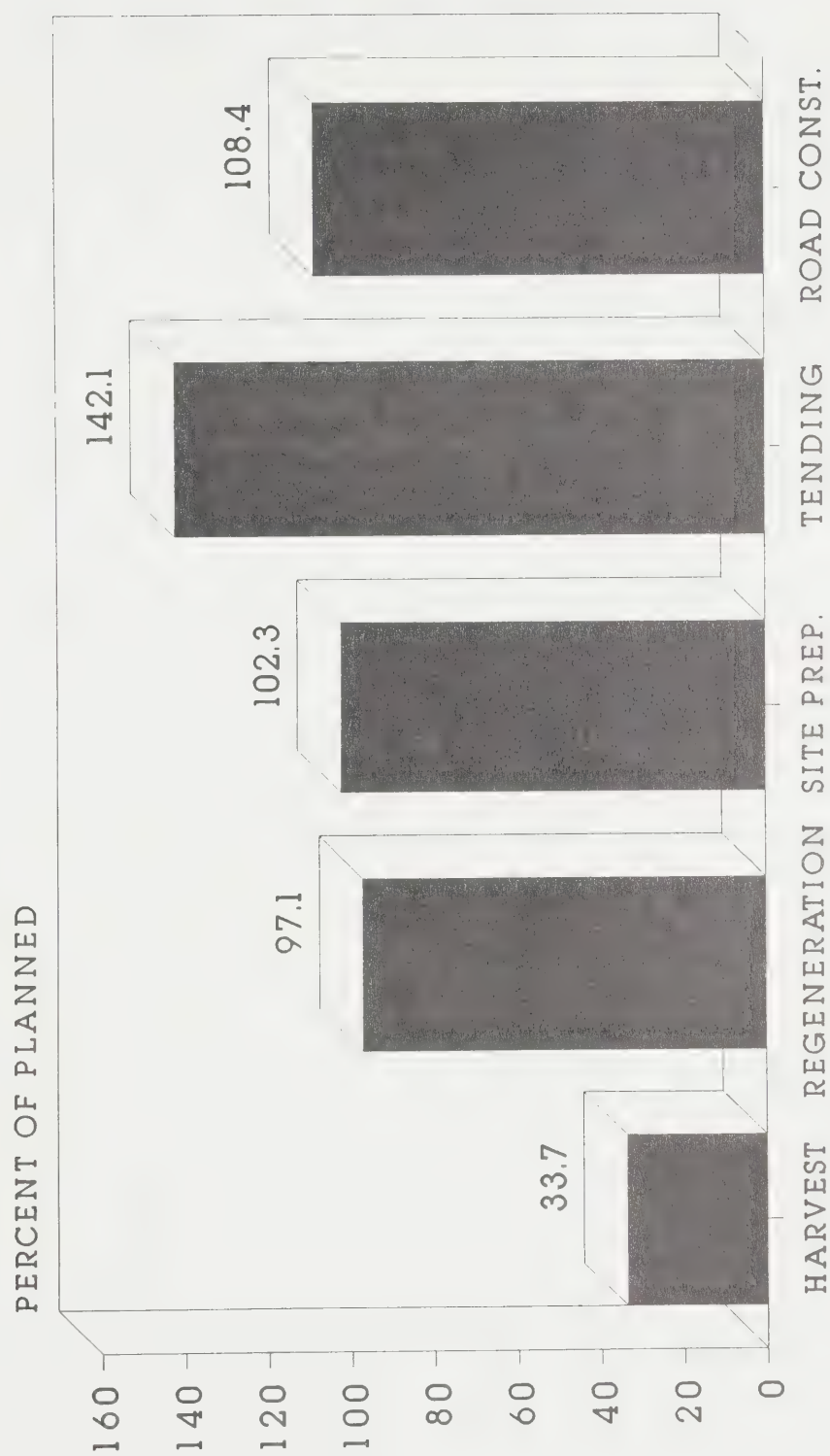
Summary of Company Forest Operations with Ministry Funding

FMA Expenditure and
Accomplishment Report
For The Five-Year Period
1986-1991FMA 502900
Black Sturgeon Forest
CP Forest Products Ltd.

Activity		Area (hectares)	Cost (dollars)
Actual Harvest		22,940	
Natural Regeneration		6,058	
Artificial Regeneration	- Planting	6,270	
	- Seeding	750	
Total Regeneration		13,078	\$ 2,226,029
Site Preparation	- Mechanical	9,346	
	- Chemical	1,060	
Total Site Preparation		10,406	\$ 3,276,745
Tending	- Chemical Cleaning	5,237	
	- Manual Cleaning	40	
	- Fertilization	2	
Total Tending		5,279	\$ 145,703
Other Costs	- Chemicals		\$ 485,453
Total Silvicultural Payments			\$ 6,133,930
		(kilometres)	
Road Construction	- Secondary	52.8	\$ 683,230
Road Maintenance		113.6	\$ 58,798
Total Road Payments			\$ 742,028
Total Payments			\$ 6,875,958

Source: Annual Reports, Tables 6.1, 6.4.1, 6.6, 6.4.3

FIGURE 1: COMPARISON OF 1986-1991
OPERATING PLAN VS. ACTUAL
FMA 502900 BLACK STURGEON FOREST



Source: 1990-91 Annual Report
1986-91 Operating Plan.

2.2 THE GROUND RULES

2.2.1. KNOWLEDGE AND FAMILIARITY WITH THE GROUND RULES AND THE AGREEMENT

Based on discussions with Company staff both in the Thunder Bay office and in the field, it was apparent to the Committee that Company staff were familiar with the provisions of the Agreement and the Ground Rules.

2.2.2 CONFORMITY OF HARVEST AND SILVICULTURAL OPERATIONS WITH THE GROUND RULES

Through examination of depletion and silvicultural records, field inspections, and discussions with both Company and Ministry staff, the Committee has confirmed that harvesting and silviculture operations were conducted in accordance with the Ground Rules.

Harvesting operations were conducted by Company commuter operations and from Camp 45 in the Black Sturgeon Forest as well as by a number of third party operations.

On upland sites the principal method of regeneration is tree planting. Three million black spruce and jack pine container and bare root stock have been planted annually in the period under review. Sixteen planting sites were visited on the field trip and the Committee was impressed by the size and complexity of the planting program. All the sites inspected were considered successful, however small container stock with minimum root collar diameter was observed. Also noted were trees planted in the centre and bottom positions of the furrows rather than in the prescribed microsites on the sides of furrows. Small containers are not acceptable and the Committee was pleased to learn that the paper pot containers will be replaced in 1992 by a new "styro block" plug designed to improve stock quality and rooting. The microsite selection and planting quality can only be improved by training and constant supervision.

Site preparation on the Black Sturgeon Forest was done initially by drags which have now been replaced by disc trenchers (TTS and Donaren), the Bracke, and the application of herbicides. The Company has developed herbicide applicators for liquid or granular formulations attached to the mechanical site preparation equipment. Ground application of herbicide is designed to improve vegetation control at the time of site preparation, reduce the need for aerial tending and reduce potential conflicts with cottagers and biological concerns for water bodies and wildlife habitat. The Company is congratulated for their foresight and encouraged to continue developing equipment for vegetation control on nutrient rich sites and environmentally sensitive sites.

Limited direct seeding has been used on the forest due to the nature of the sites and competition encountered. Field observations indicate that jack pine grows naturally very well on the coarser and dryer upland sites even though, due to natural succession, jack pine was not a major component of the previous stands. The Company is now planning more jack pine regeneration through careful site selection and aerial or ground seeding with the new pneumatic seeders attached to site preparation equipment. This will allow a modest increase in jack pine regeneration, a reduction in jack pine

planting stock, and allow the Company to make better use of their planting stock quota to produce spruce for the more productive sites in the Forest.

Competition control in plantations is a major concern to the Company. The Black Sturgeon Forest has very rich sites with competition from a variety of shrubs, grasses, and tree species. In the period under review the Company applied aerial herbicide to an area equal to 80% of the area of artificial regeneration. The Committee noted a range of success in the application of herbicides among plantations receiving aerial herbicide treatment. The Committee suggests that the Company consult other companies and the Northwestern Ontario Forest Technology Development Unit (TDU) in order to improve control of the target species with aerial herbicide. Good tending practices are essential to the success of the renewal program on the Black Sturgeon Forest.

From the limited number of lowland spruce sites inspected, the Committee was concerned that a significant number will not reach the required stocking of 40% to black spruce at the time of the fifth year assessment. A ten year establishment period will be required for many of these stands. In most cases the seed source is small unmerchantable black spruce left on the site, but the current spruce budworm infestation over much of the forest has reduced seed production. Natural regeneration on the lowland spruce sites visited would benefit from modified harvest cutting as described in the Ground Rules to augment the seed supply for natural regeneration.

Stands harvested in the poplar working group are now being left for natural poplar. A few stands were inspected and appear successful either for the poplar or the new mixed wood working group launched in the 1991-96 Ground Rules.

The Company is commended for the innovative approach to the silviculture program on the Black Sturgeon Forest. They have developed an excellent program in a very short period and have taken a practical approach to the mix of artificial and natural regeneration that the sites and silviculture funding will allow. They now have the opportunity to fine tune regeneration, silvicultural prescriptions, site selection, and cultural practices to improve quality and ensure the best return possible with the planting stock and funds available.

RECOMMENDATION: That the Company provide the opportunity for key staff to improve their skills in site selection and cultural practices for regeneration and tending using the Forest Ecosystem Classification for Northwestern Ontario and draw upon the experience of other companies and the Technology Development Unit in Thunder Bay.

The Ground Rules permit the classification of non-treatable sites by mutual agreement. While the Company is concerned in tracking depletions and updating the forest inventory, they have not declared any area non-treatable in the first five-year period of the Agreement. There has been enough time for the Company to observe what happens to these types of sites. Although non-treatable areas are presently a small proportion of the cut-over area in the Black Sturgeon Forest, the Committee believes that recognition and reporting of non-treatable sites will contribute to a more accurate forest inventory.

RECOMMENDATION: That the Company review the status of lands cut over during the five year term for which Table 1 of the Ground Rules specifies treatment but which have received

no treatment, and that the Company propose areas to be classified non-treatable to the Ministry and report any areas mutually agreed to be non-treatable in Annual Reports prior to the preparation of the 1996-2016 TMP.

Fifth year stocking assessments were carried out on cutover lands. The Annual Reports indicate that 4,758 hectares were assessed with 54% in the spruce working group, 35% in jack pine, and the remainder in balsam fir and poplar working groups. The majority (90%) of the assessments were performed on treated lands.

As required under section 5.3.6 of the Ground Rules (schedule "C"), the Company identified and reported to the Ministry areas requiring protection from defoliating insects.

2.2.3 CONFORMITY OF INVOICING WITH THE GROUND RULES

The invoicing procedures of the Company followed the Ground Rules. In most cases, reconciliation of hectares treated, number of trees planted, and kilometres of roads constructed or maintained were done prior to the submission of the official invoices. The following example illustrates the basic procedure. After silvicultural treatment, the Company marks the treated area on an aerial photo of the cutover. This is then traced onto an FRI map using a Sketchmaster (scale 1:15,840) and is submitted to the Ministry. Ministry staff then check the treated area on the ground against the FRI map and note any corrections. The Company then submits an invoice based on the approved area.

2.2.4 PREPARATION OF NEW GROUND RULES

The Forest Management Agreement with the Company requires both parties to commence the preparation of the new Ground Rules for the next five-year term at least eight months prior to the expiry of the old Ground Rules, and to agree upon those new Ground Rules on or before the expiry date of March 31, 1991. At the time of this review, the new Ground Rules were prepared and agreed to by the Company and Ministry staff.

2.3 HARVEST LEVELS, MAXIMUM ALLOWABLE DEPLETION, YIELDS AND WOOD FLOW

According to paragraph 16(1) of the Agreement, the Company has agreed to maintain its harvest on the Black Sturgeon Forest at a level between 90 percent and 110 percent of the adjusted maximum allowable depletion (MAD) for each working group in each five year term. The Company may request the Minister to authorize variations to the levels specified in the Agreement.

Paragraphs 16(3) and 16(4) of the Agreement provide for either a remedy or liquidated damages in the event of an overcut or undercut on the area under agreement. The Agreement holder may avoid liquidated damages through the declaration of timber surplus (paragraph 16(5)) to its needs in an approved Management Plan, however, liquidated damages do not apply in the first five year term of a Forest Management Agreement. Therefore the Black Sturgeon Forest is not subject to liquidated damages over the period of this review.

Table 2 illustrates the forest working groups available for harvest (1986-91 MAD), the total depletion, the actual harvest by working group, the total area renewed and the forest available for harvesting by working groups in the next five-year period 1991-96.

Figure 2 illustrates the relationship between the allowable depletion and the actual harvest. The MAD was 50,191 hectares, the allocation was 68,111 hectares (a planned overcut to harvest budworm infested stands), and an actual harvest of 22,941 hectares. The large undercut resulted from the following;

- i) poor markets caused two waferboard plants to close, and sawmills and pulp mills to reduce production. The major undercuts occurred in the hardwood working groups because of the waferboard plant closings,
- ii) an intentional over allocation occurred in the heavily infested budworm stands to allow Great West Timber more flexibility in selecting suitable stands containing quality sawlogs,
- iii) the actual yield was approximately double the forecast yield - refer to Table 3, as many of the low yield budworm stands proved to be uneconomical to harvest. The forecast yield included budworm infested stands.

The Committee recognizes the allocation problem resulting from the budworm infestation and market changes, but believes that the Company should monitor these closely.

RECOMMENDATION: That in the event the Company should forecast depletion levels during the second five year period to fall below the 90% level of those stated in the current TMP, the Company should take immediate action to request, with reasonable explanation, an undercut variation from the Ministry and to amend the TMP with a further surplus declaration.

Further to the problem of achieving 90% of the adjusted MAD, it is difficult for the Company to obtain up-to-date harvest information from third parties in order to declare additional surplus occurring in the fifth year.

RECOMMENDATION: That the Ministry clarify the responsibility for liquidated damages resulting from third party operations during a five year period.

Table 3 is a comparison of the 1986-91 forecast and actual volumes, area, and yield and the percent of actual vs. forecast. In addition, the forecast for the next five year period is shown. While the Company and third parties only cut 34% of the area forecast, they harvested 71% of the planned volume, due to the actual yield being double that which was forecast. The Company harvested 87% of planned volume while the five third parties varied between 2% and 63% of planned volume.

TABLE 2

Depletion of Agreement Area for 1986-1991
(hectares)

FMA 502900
Black Sturgeon Forest
CP Forest Products Ltd.

Working Group	Maximum Allowable Depletion	Total Depletion	Actual Harvest	Renewal	% Renewal	1991-96 MAD
Spruce	8,703	8,069	6,371			6,838
Fir	13,760	12,000	8,980	renewal data not		22,092
Jack Pine	3,591	1,507	1,355	available		3,778
Other Conifer	1,508	1,227	847	by working group		1,524
Poplar	9,279	3,300	2,867			9,011
Birch	13,350	3,538	2,521			13,264
TOTAL	50,191	29,641	22,941	14,247	62.1%	56,507

Source: 1986-91 TMP, 1991-96 TMP, Annual Reports

FIGURE 2: COMPARISON OF 1986-1991
ALLOWABLE DEPLETION and HARVEST
FMA 502900 BLACK STURGEON FOREST

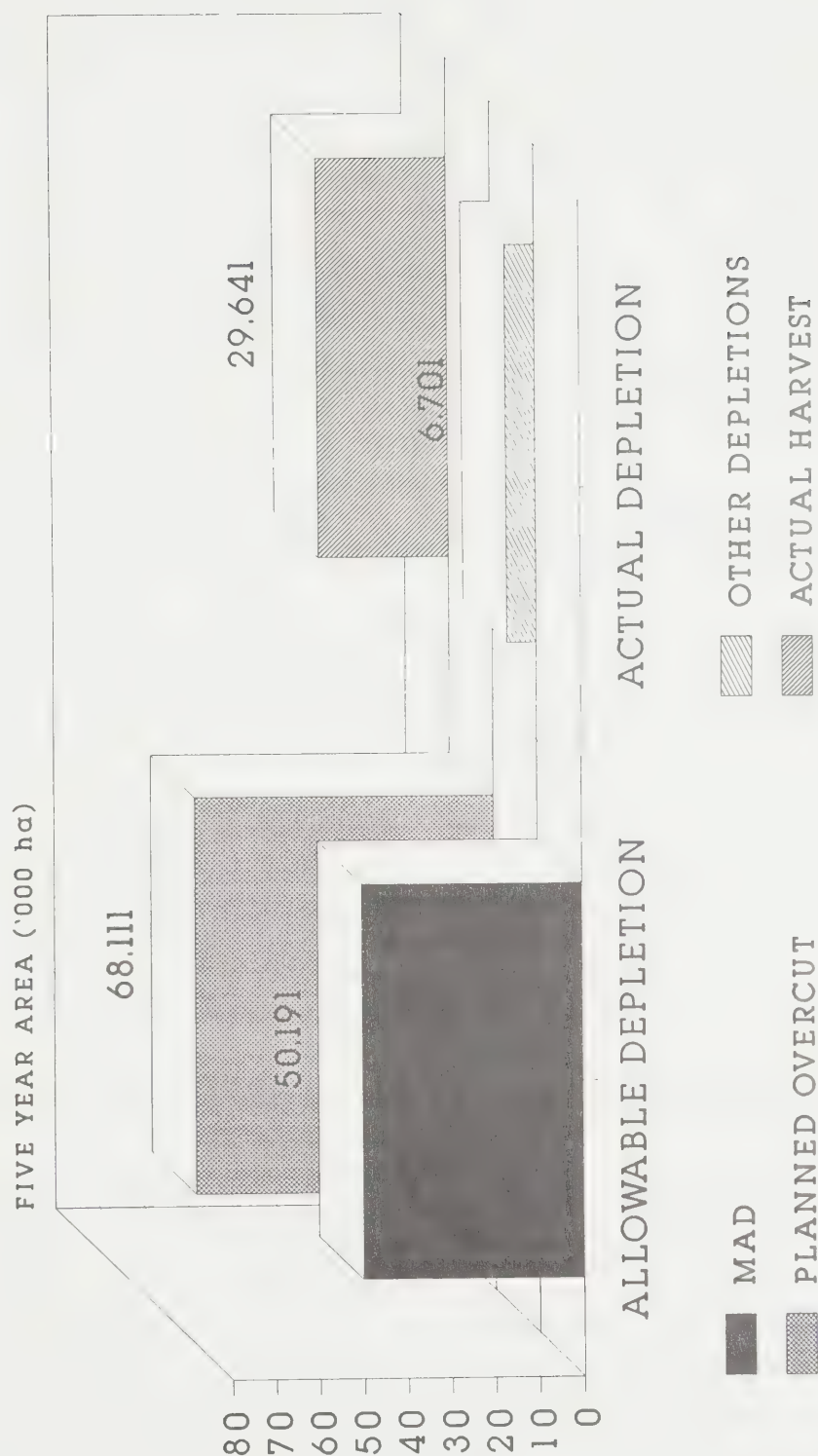


Table 3 - Comparison of Forecast Volume, Area and Yield vs. Actual

	Forecast 1986-91	Actual 1986-91	Actual vs. Forecast	Forecast 1991-96
Volume	2,888,000 m ³	2,054,077 m ³	71%	5,133,660 m ³
Area	68,110 ha	22,937 ha	34%	39,437 ha
Yield	42.4 m ³ /ha	89.6 m ³ /ha	211%	130 m ³ /ha

The table shows that the Company has recognized the over allocation problem of the past five years and has increased their forecast yield to 130 cubic meters per hectare, which is more in line with actual yields (124 cubic meters per hectare) experienced in the 1981-86 period. In view of the marked increase in balsam fir stands as shown in Table 2, these yields may be optimistic and the Committee recommends that the following action be taken.

RECOMMENDATION: That the Company update its inventory data through operational cruises of areas to be harvested in the 1991-96 period, and request additional allocations or declare surpluses where necessary.

The last three recommendations highlight the importance of securing good inventory information, keeping up to date with harvest yields, and good communications with third party operators. In the second five year period of the Agreement, when liquidated damages apply, the Company will have to exercise better control over these factors to ensure compliance with the Agreement.

Wood flow from the Black Sturgeon Forest was quite diverse as nine operations received forest products from the FMA, including veneer, pulpwood, and sawlogs. The Company harvested 1,682,422 cubic meters (82%) while third party operators cut 371,634 cubic meters (18%). The Company is forecasting a major increase in harvesting on this FMA in the 1991-96 period with volume increasing to 5,133,660 cubic meters from 39,437 hectares (refer to Table 3).

2.4 NSR OBLIGATIONS

Under the provisions of the Agreement, the Company has an obligation to reforest NSR lands at the rate of 5% of NSR Class 2 and 3 lands annually. This amounts to a total of 988 hectares for the five year term under review and a total of 3,952 hectares for the entire 20 year period of the Agreement. In the five years under review the Company found that limits on planting stock and silvicultural funding did not allow them to meet silvicultural targets for both NSR lands as well as for current cutover. The Company explained to the Committee that it had elected to concentrate on current cutover for a more efficient operation and hence treated only 37 hectares of NSR Class 2 and 3 for regeneration. Figure 3 shows the comparison of the NSR obligation and area treated.

TABLE 4

Comparison of Planned vs. Actual Harvest 1986-1991
(hectares)FMA 502900
Black Sturgeon Forest
CP Forest Products Ltd.

Working Group	Maximum Allowable Depletion	Declared Surplus	Forecast Harvest	Actual Harvest	% Actual vs. Forecast Harvest
Spruce	8,703	181	11,029	6,371	58%
Fir	13,760	581	18,338	8,980	49%
Jack Pine	3,591	662	2,991	1,355	45%
Other Conifer	1,508	174	1,912	847	44%
Poplar	9,279	7,247	14,211	2,867	20%
Birch	13,350	7,162	19,630	2,521	13%
TOTAL	50,191	16,007	68,111	22,941	34%

Source: Original 1986-91 TMP, Annual Reports

The Company is presently conducting a field survey to track the previously depleted areas and to reclassify them where necessary. The Company plans to treat all areas that are classified as NSR 2 and 3. The Committee is concerned about the future status of the original NSR 2 and 3 lands.

RECOMMENDATION: That the Company and the Ministry jointly review the current status of the NSR 2 and 3 lands based on the current survey and that based on the results of this survey the Company's commitment of NSR 2 and 3 lands should be revised.

2.5 ROAD CONSTRUCTION AND MAINTENANCE

Paragraph 27 of the Agreement provides for the Minister to reimburse the Company, subject to a maximum amount per kilometre, for construction, reconstruction and maintenance of forest access roads on the Agreement area. To be eligible for payment, roads must be detailed in an Annual Work Schedule and constructed according to "Schedule E" of the Agreement.

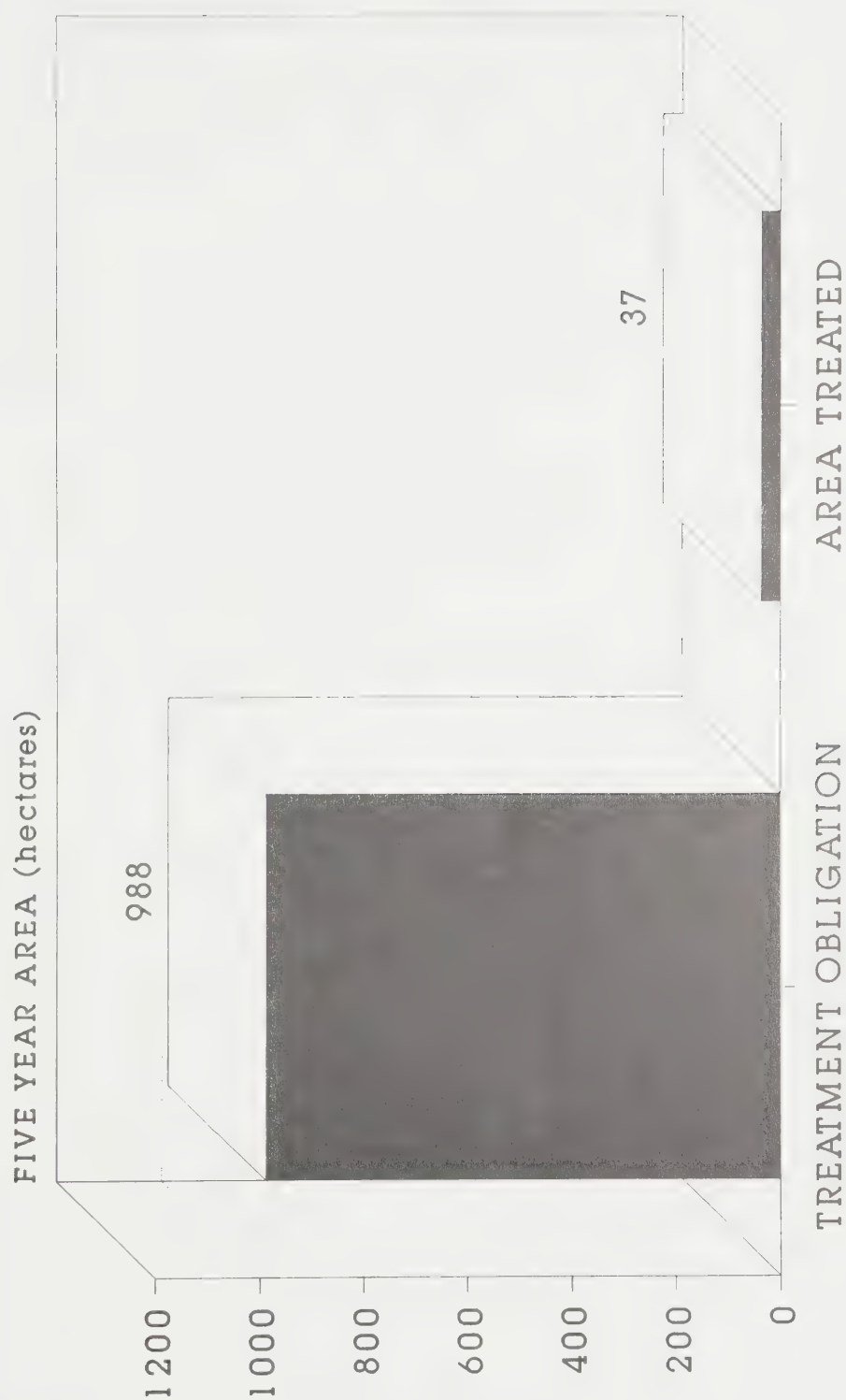
Of the three blocks of forest which comprise the Black Sturgeon Forest, the central or Black Sturgeon block had the most well-developed road system prior to the signing of the FMA. The Company has operated in this area for over 50 years. Harvesting by the Company did not begin in the southern and northern blocks until the 1970s or 1980s. During the period under review, about 62% of the funded roads were constructed or reconstructed in the central block where the Company concentrated its operations. Only 26% of the funded roads were built in the southern block and 12% in the northern block. Thus, the southern and northern blocks remain relatively poorly accessed. Additional road construction is planned for the central and northern blocks in the new TMP.

Compared with other FMAs, the road program for this forest was modest. Over the period under review, the ratio of hectares of timber harvested to kilometres of FMA road constructed was 434 hectares per kilometre in the Black Sturgeon Forest. This was six times more hectares per kilometre than that for other FMAs in the first five years. The Ministry reimbursed the Company and third parties for a total of 52.8 kilometres of secondary roads during 1986-1991 (Table 1; 1.5 kilometre represented reconstructed road). Third parties built 21.4% (11.3 kilometres) of the funded roads within their own areas of operation but were able to work behind the Company and use the existing road system where a variety of products were retrievable from a stand (e.g., pulpwood and veneer logs).

Road funding covered only 43.2% of the planned road construction (Figure 1) and 73% of the planned maintenance. The Company built 56.6 kilometres of secondary roads and maintained 441.8 kilometres at their own expense. Overall cuts by the Ministry to the FMA road program were largely responsible for the low funding. In addition, the Company did not invoice the Ministry for portions of some roads which the Company thought it would have been impractical to build through rough terrain to FMA standards. The general public was free to use all of these roads except near current operations where temporary gates were erected to protect men and equipment.

In the first two years of the period under review, invoices sometimes were returned because the Ministry and the Company did not agree on whether the roads met the standards specified in the Agreement. However, in the last three years representatives of the Company and the Ministry

FIGURE 3: COMPARISON OF 1986-91
NSR OBLIGATIONS VS. TREATMENT
FMA 502900 BLACK STURGEON FOREST



checked the standards and lengths of roads together and resolved problems prior to submission of the official road invoices.

In the TMP for 1986-1991, roads were located within corridors which were 500 meters in width except through AOCs where they were 100 meters wide. Roads were involved in several of the amendments made to the TMP during 1986-1991. In a few cases deviations outside the original planned corridors were required once the limitations of terrain were discovered in the field. In one case not covered by an amendment (see section 2.1.2 "Plan Implementation"), a portion of a third party road was built outside the corridor to avoid a prominent landform. The Committee believes that problems such as these could be avoided with better planning.

RECOMMENDATION : That the Company and third parties improve the inspection of proposed road corridors prior to submitting plans so that the subsequent number of amendments will be reduced. In addition, that the Ministry, the Company, and third parties ensure that the road locations proposed in the AWSs correspond to those in the approved TMP.

In the TMP for 1986-1991, harvesting in the oldest stands first was not the major objective of the access plan. The Company put more emphasis on access for the purpose of salvaging stands damaged by the spruce budworm and to satisfy requirements of third parties.

On roads invoiced for maintenance, grading, and stream crossing repairs were conducted as required.

2.6 COMPANY RECORDS

A common problem among FMAs is tracking of the forest landbase, specifically small bypassed stands and those left for natural regeneration, in such a way as to minimize what erroneously appears on paper to be the progressive reduction of the area of productive forest and contributes to the apparent gap between the amount of area harvested and the amount regenerated (e.g., Table 2). The Company has been working to rectify this problem partly through improvements in record-keeping and mapping.

During the period under review the Company maintained two types of maps: FRI depletion maps with cutovers and roads marked on the back, and silvicultural sepia maps derived from the approved invoices (see section 2.2.3 - "Conformity of Invoicing and Other Areas"). Areas shown on silviculture invoice maps were traced onto mylar planimetric maps (scale 1:15,840) of the cutovers. Separate map prints were then made, one for each type of silvicultural operation (e.g., planting, seeding, site preparation). Each silvicultural project on the map was given a unique number. Detailed project information was recorded in companion paper files which contained a map of the project area and a Silvicultural Information System (SIS) card which was cross-referenced to other projects in the same area. The manual overlaying of a series of maps was required to identify all the operations which had occurred on a given piece of ground. However, the Company has recently acquired a Geographic Information System (GIS) which will simplify this process.

The Committee was impressed with the Company's technological advancements which indicate their dedication to effective and efficient forest management. The Company has entered depletion records into its GIS system and will handle renewal data through the GIS once their own computerized Silvicultural Record-keeping System (SRS) is refined. The SRS will combine the production of invoices and annual reports. SRS and GIS will permit map production and better tracking of changes in the forest landbase. Computerized dataloggers are used to record survey information in the field. The Company has invested in a colour photocopier which greatly reduces the amount of manual map-colouring required and is investigating the utility of Geographic Position Systems (GPS) operating through satellites to aid in the mapping of treated areas in the field.

The Company has all records of Ministry work and the Ministry is given access to all records of Company work on the FMA area.

2.7 ANNUAL REPORTS

Annual reports were submitted early or within days of their due dates and consisted of the required tables as well as a covering letter which served as a permanent record of the submission date. Except for renewal treatments which were not broken down by working group, Annual Reports followed the format specified in the new TMP manual.

The Agreement (Schedule C, Section 14) requires that the Company provide details of substantial overcutting or undercutting annually in the reports. This was not done until the last two years of the period under review when the reports included a summary of highlights of the previous year with explanations for major deviations from targeted levels of achievement. The Committee encourages the Company to continue this practice. A short textual report would serve as supporting documentation for the five-year summaries and would aid the Company in the preparation of portions of the next TMP (i.e., Report on Past Forest Operations).

Accuracy in Annual Reports is essential because a variety of documents are generated from their contents. According to the Company, all of its Annual Reports were revised during 1991 to correct clerical errors, to be consistent with the reporting style required in the new TMP manual, to add Ministry work and correct errors in that data, and to report on an area (150.4 square kilometres) which had been formerly licensed for five years to Great West Timber as a budworm salvage area prior to the signing of the FMA. The Committee found that ongoing revisions resulted in too many disparate reports on the same operations which made it very difficult to track the changes which had been made. The Committee believes that Annual Reports should not be revised and re-issued except where major changes are required (e.g., the exclusion noted above), and that under normal circumstances corrections should be made in the explanatory footnotes shown in the next Annual Report. This would enable straightforward tracking of changes. The Committee encourages the Company to adopt this practice for 1991-1996.

The Committee examined invoices and found that all cumulative FMA road lengths and the associated costs were reported correctly in the revised annual report for 1990-1991. Also, individual and cumulative totals of hectares treated were consistent among the revised Annual Reports for three categories of silvicultural treatment. A similar comparison suggested that there were no inconsistencies in the reporting of depletions among revised Annual Reports.

2.8 INTEGRATION WITH OTHER FOREST USES

Section 12 of the Ground Rules of the Agreement, entitled Integration of Other Resource Values in Timber Management, explains how the Company and the Ministry will manage certain lands, designated as Areas of Concern (AOCs), for uses other than or in addition to timber production. The Ministry identified 303 AOCs on maps and in tables in the 1986-1991 TMP.

During the period under review, AOCs were established mainly around water bodies and to enhance habitat for moose. Some harvesting was conducted only in winter to minimize the impact on local cottagers. A few AOCs were designed to protect significant resting areas for waterfowl, for aesthetics and to prevent drifting snow along highways, and to protect access points and existing or potential cottage sites. In the new TMP some AOCs are designed to maintain vistas and views, to protect mineral licks, eagle and osprey nests, a moose calving site, and a large number of aquatic feeding areas used by moose. In 1986-1991, most AOCs were full reserves, although a few saw-toothed or block cuts were performed. The Committee encourages the Company and the Ministry to devise more creative treatments around water bodies, where permitted by the Timber Management Guidelines for the Protection of Fish Habitat, to provide a greater diversity of wildlife habitat in riparian zones.

Field inspections by the Committee revealed that some of the older cuts were too large to be considered fully usable by moose but that the Company and the Ministry did a commendable job of establishing wildlife corridors and adding leave blocks to reduce the effective size of clearcuts during the period under review. In some areas where third parties were operating, the natural dispersion of mature stands or a block cut design rendered the cuts small enough to provide excellent moose habitat.

The Company has shown commendable interest in the management of wildlife habitat in the Black Sturgeon Forest. The Company participates in special wildlife projects with the Ministry's Northwestern Ontario Forest Technology Development Unit (e.g., field test of the applicability of the Forest Ecosystem Classification for rating the quality of habitat for moose) and with Lakehead University (e.g., herbicide-habitat studies). Also, at their own expense, the Company surveyed areas treated with different types and application rates of herbicides to determine the impact on the availability of moose browse. Company staff have received training in FEC which will enable them eventually to propose the wildlife-related AOCs in their management plans themselves.

The Committee inspected one chipping operation in a salvage cut area. By increasing the utilization of timber on a site, chipping has the potential to result in exceptionally clean cutovers which could be inhospitable to most wildlife. Surprisingly, the site was not much different from other cutovers. It contained patches of large unmerchantable standing trees, which will eventually become snags, and abundant coarse woody debris, habitat features which enhance the value of cutovers to wildlife. Field inspections of other sites showed that the harvesting and site preparation methods used by the Company often resulted in a good residual population of snags (e.g., feller bunchers followed by Bracke site preparation). The Committee encourages the Company and third parties to continue to leave unmerchantable live and dead trees standing on the cutovers wherever possible.

Until 1988 when the Environmental Guidelines for Access Roads and Water Crossings were introduced, specifications of water crossings were left up to the Company. Crossings were not

addressed in detail in the AWSs until 1990-1991 when a table which listed all crossings and their proposed and approved culvert sizes was included. Field inspections showed that water crossings were generally adequate, although there were a few problems. In one case a third party partially blocked a stream with fill and did not install a culvert. In a few other cases culverts seemed minimal in diameter or appeared to be set a bit too high on one end to allow the unobstructed movement of fish and water in all seasons. Old bridges installed before the FMA and now on naturally abandoned roads were generally in good to excellent condition. The Committee encourages the Company and the Ministry to ensure that these old crossings remain acceptable by repairing or removing them if needed, as required by the crossing guidelines (section 4.0).

Generally, the Company co-operates well with Ministry staff as they strive to manage the Black Sturgeon Forest for a variety of uses. However, there have been some problems. Although few charges have been formally laid, partly because of the time and cost involved, the Ministry has sent numerous warning letters to the Company and to third parties for trespass infractions into AOCs, particularly in 1988 and 1989. In some cases reserve boundaries had been marked in the field but operators crossed the flagged lines to extract wood.

RECOMMENDATION: That the Company and third parties minimize future incursions into AOCs by ensuring that planners and field personnel are aware of the location and importance of the reserves.

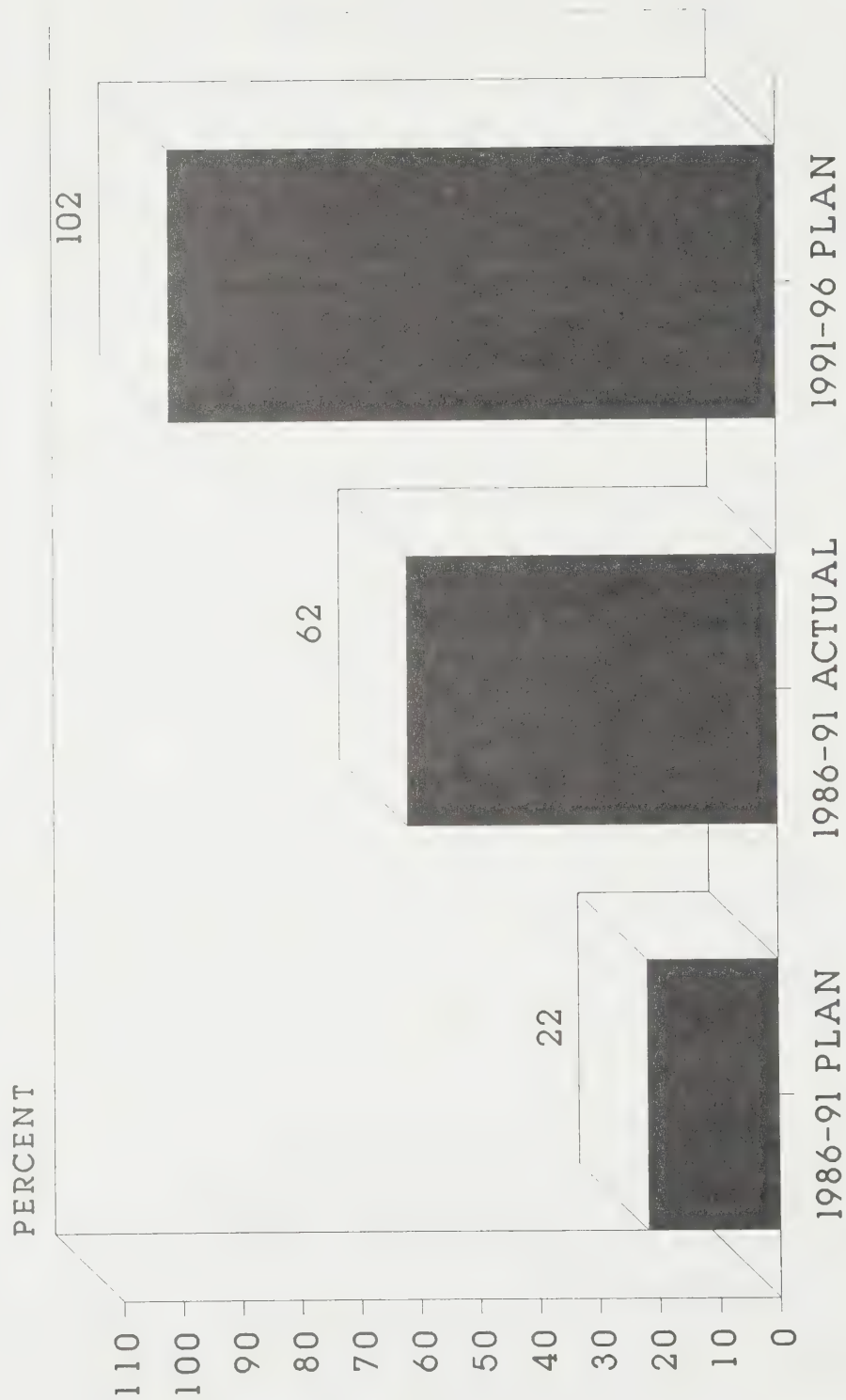
The Committee commends the Company for its minimal use of gates and for its regular practice of moving gates, which are erected in the operating areas to ensure the security of workers and equipment, and at the same time maximize the portion of the Black Sturgeon Forest which is accessible to the public.

Compared with some other FMAs, the Black Sturgeon Forest has few tourist outfitters and outpost camps. The Company has been sensitive to the concerns of other forest users and the public generally. Company foresters have conducted special field trips for the public to view some of their operations and have discussed their treatments with individuals who have expressed concerns. Also, during the preparation of the new TMP the Company worked with representatives of the Canadian Outward Bound Wilderness School to ensure that satisfactory AOCs were established in the School's area of activity. The Company built a portage at its own expense for the group.

3. MAINTENANCE OF PRODUCTIVITY

Table 2 shows the MAD which was calculated for the Black Sturgeon Forest by the Ontario Wood Supply and Forest Production Model (OWOSFOP) for the five year term under review, to be 50,191 hectares for all working groups. The total depletion of 29,641 hectares was 59% of the MAD, with 70% of the surplus occurring in the hardwood working groups. The most desired species, spruce, was depleted by 84%. The acceleration factor has been reduced for the next five years and the Forman model was used to supplement the OWOSFOP model. The 1991-96 MAD has increased to 56,507 hectares primarily due to a 60% increase in the balsam fir working group, while the spruce working group has decreased 21%. The shift to the balsam fir working group will permit salvage of low volume budworm damaged stands. However many of these are deteriorating at such a rate that

FIGURE 4: COMPARISON OF 1986-91
RENEWAL AS A % OF HARVEST AREA
FMA 502900 BLACK STURGEON FOREST



they will soon be uneconomical to harvest. The Committee is concerned that many of these areas will be untreatable and thus lost to future production in the forest.

To put the Company renewal program into perspective with the area harvested, Figure 4 shows the planned forest renewal for 1986-91 of 14,686 hectares was only 22% of the area planned for harvest. The actual forest renewal of 14,248 hectares was 62% of the area of actual harvest, a big improvement over the plan but still short of the regeneration needs to sustain the Black Sturgeon Forest.

In the TMP for 1991-96 the Committee was advised that planned forest renewal is 40,311 hectares, 102% of the 39,437 hectares planned for harvest. Most of this increase is artificial regeneration. The Company is commended for planning to meet the regeneration needs of the forest, realizing that achievement will depend on their expertise and the funding available.

While renewing the forest after depletion will ensure production of wood fibre, the newly regenerated areas (artificial and natural) can only be returned to the forest inventory land base and MAD calculation through the free-to-grow (FTG) process or a new Forest Resources Inventory (FRI) survey. The Company is concerned about the depletion of their productive forest area and has initiated a complex program for tracking the forest to update their land base using GIS. Keeping track of regenerated areas and entering FTG stands into the system is one important aspect of the program.

In the period under review no FTG targets were established but 11,828 hectares were assessed and 2,009 hectares approved, 1,440 hectares natural and 569 hectares of artificial regeneration. The 1991-96 TMP has plans for 10,000 hectares per year of FTG surveys, largely from pre-FMA disturbance on the forest. The Company and the Ministry are currently working on a joint 20,000 hectare survey in the Black Sturgeon Forest in an effort to speed up the FTG surveys.

The Company and the Ministry are commended for these initiatives in modernizing stand tracking procedures to maintain an accurate up-to-date forest inventory.

4. COMPANY FOREST MANAGEMENT ACTIVITIES CONDUCTED BEYOND THE OBLIGATIONS UNDER THE AGREEMENT

The Company has been involved in forestry activities in the Thunder Bay area for many years. Some of their recent achievements are noted below.

The Company has worked with a local contractor to develop an applicator for ground herbicides (liquid and granular) attached to site preparation equipment (Bracke and Donaren). These units are now operating on the Black Sturgeon Forest.

A GIS system has been installed and is being used to produce digitized maps for a variety of uses by the Company. A computerized silvicultural record system has been developed and is being tested. When operational, current silvicultural data will be made available through the GIS.

In 1991 all NSR 1 lands and Barren & Scattered (B&S) from the 1976 inventory are being jointly surveyed for FTG status by the Company and the Ministry.

The Company has taken the initiative in contacting and dealing with the Outward Bound School and other users of the forest during the TMP preparation.

The Company is an active member of the Ontario Tree Improvement Council (OTIC) and is involved with other member companies and the Ministry in the selection of plus trees, establishment of seed collection areas, and planting two family test sites.

The Company also encourages professional staff to participate in professional associations, take staff training courses at Lakehead University and co-operate with a variety of agencies in field trials and surveys.

5. STAKEHOLDER CONCERNS

5.1 PUBLIC CONCERNS

On April 9, 1991 a Public Concern Meeting was held in Thunder Bay. The review co-ordinator, John M. Duncanson, chaired the meeting. Approximately 380 Notices were sent out prior to the meeting to various interested parties as well as published in the local newspapers; 12 people attended the meeting.

Following a description of the FMA review process by the chairman, the floor was opened to discussion and expression of concerns.

There were two concerns presented regarding the operations of Canadian Pacific Forest Products Limited on the Black Sturgeon Forest. (Public Stakeholders concerns were addressed and the Review Committee comments are in italics).

- i) A camp owner (East Bay, Dog Lake) expressed concern about the co-ordination between the Ministry and the Company regarding road grading and maintenance as well as the general quality of the roads being "too basic".

The Committee noted that in several instances third party operators used existing Company built road systems, this led to heavy use of the roads, and lower surface quality.

- ii) A gentleman who described himself as a "forest user" had three concerns. The garbage such as empty oil cans left behind by logging contractors, the blockage of roads with cut wood stacked to close to the road side, and the pre-FMA piles of logs left behind in the bush.

The Company is aware of these concerns and will ensure closer supervision of its contractors in future.

On April 12 the Thunder Bay District office received a written submission from the Canadian Outward Bound Wilderness School which contained two concerns;

- i) "First we would like to acknowledge the voluntary efforts undertaken by CPFP (the Company) over the past eighteen months to fully educate and inform themselves of the specific operational needs of Outward Bound as they relate to the Black Sturgeon Forest. In a similar spirit CPFP has been equally open and frank about the realities and demands faced by their organization. Together we have been able to move forward to creating specific agreements and agreements in principle concerning specific areas of the Black Sturgeon Forest that are integral to the long term viability of Outward Bounds operations in this region. We look forward to continuing in this spirit of partnership so vital to balancing the complexity of demands currently placed on our forest resources."
- ii) "With respect to the overall planning process it is our primary concern that it remain as open and flexible as possible and include expanded mechanisms for public input. We would like to see the Black Sturgeon Forest Planning Committee include either representatives from groups like Outward Bound who have vested interests in being involved in the earliest stages of planning. Or, alternatively that observers be admitted who may not offer direct input during the planning meetings themselves but are nevertheless privy to the preliminary plans being tabled and discussed. We believe that the earlier we can be admitted to the planning process the more relevant our input would be. We also feel our early involvement would result in greater alignment with respect to our shared long-term view of forest management in the Black Sturgeon Forest."

The Committee viewed, from the air, a canoe portage the Company built at its own expense for the use of the Outward Bound School.

5.2 COMPANY CONCERNS

On June 17, 1991 the Review Committee met with Company officials to discuss their concerns regarding the management of the Black Sturgeon Forest. The Company provided a list of their concerns and comments in writing. The following are the Company's concerns;

- i) The Company is concerned about the Ministry's commitment to fund the FMA program, and feels that the Ministry is not living up to their part of the FMA contract. Road funding has been significantly reduced over the past few years, with no road funding being provided yet for 1991-92. The "tree cap" remains in place, and in order to meet the stock requirements for the Black Sturgeon Forest the Company has to utilize trees from other FMAs. The herbicide tending program was cut by 20%.

The Company is also concerned about the delays in approval of silviculture programs. Funding levels and rates are often not finalized until July, well after the programs have started.

- ii) In the 1986-91 period the Company was able to use herbicides to the extent required. The Company is concerned about the affects of the recently announced reduction in the use of herbicides. Many of the sites on the Black Sturgeon Forest are the most productive of any of the Company's licensed areas and are subject to very heavy grass and raspberry competition. Planting is the common silvicultural prescription for the Black Sturgeon and there is a need to protect this larger investment. In addition many stands are severely damaged by spruce budworm before harvest. The opening of the stand canopy by the budworm has allowed competition to become established before harvest.
- iii) The Black Sturgeon Forest has been under severe spruce budworm attack for several years. The Company is concerned about the Ministry's ability and willingness to mount an effective control program. The Ministry has committed to use only *Bacillus thuringiensis* (Bt) which requires ideal conditions to be effective. In addition to the loss of wood fibre, the budworm causes other problems, namely, that no good spruce cone crops are produced in this forest, making it difficult to obtain seed for nursery use or seeding.

The Company is not entirely satisfied with the 10 year harvest criteria i.e. that if a stand is not scheduled for harvest within 10 years, the Ministry will not protect it. The Company feels that stands that will provide wood supply for 10-20 years from now should be protected. As a result the Company in harvesting protected stands within 10 years has had to bypass unprotected stands that could have been salvaged.

- iv) The Company has several concerns regarding Ministry administration:
 - with the current Ministry reorganization the Company is concerned that if the Black Sturgeon Forest falls into the Nipigon District they will lose some flexibility to move funding from other Company FMAs in the Thunder Bay District.
 - record keeping and information exchange between the Company and the Ministry has not been good in the past. This situation has recently improved greatly and the Company expects that such things as obtaining maps of areas that had been sprayed for budworm control which had been difficult will be better in the future.
 - recent Annual Work Schedules have contained ever increasing demands for additional information and support documentation. Often these requests are made late, and could be better met if the Company is informed sooner. The approval process is limiting the Company's opportunity to be innovative. Due to its staff of highly qualified professional foresters the Company does not understand why every silvicultural prescription should be questioned by Ministry foresters.

5.3 MINISTRY CONCERNS

On June 20, 1991 the Review Committee met with Ministry staff to discuss their concerns regarding the management of the Black Sturgeon Forest. The Ministry provided a list of their concerns and comments in writing. The following are the Ministry's concerns;

- i) The Ministry staff are concerned about the undercut, that only a third of the planned harvest (MAD) was harvested.
- ii) The Ministry staff are concerned about the NSR commitments not being met.
- iii) The Ministry feels that the tracking of the forest needs to be improved.
- iv) The Ministry feels that the Forest Ecosystem Classification System should be utilized as the basis of silvicultural prescriptions.
- v) The Ministry suggests that the Company use the Technology Development Unit to a greater extent.
- vi) The Ministry is concerned over the extent of slash piles and the fact that most are on very productive sites.
- vii) The Ministry feels that Company road location planning could be improved.

6. CONCLUSIONS AND RECOMMENDATIONS

The Committee is satisfied that the obligations of the Company under the Agreement have been satisfactorily performed by the Company during the five-year term under review.

The Company has done an exceptional job of developing a new system of tracking the forest to meet the new land base and inventory demands of the FMA. This tracking procedure in conjunction with the GIS system will allow them to keep track of regenerated and FTG areas and provide them with up-to-date records of depletion and productive forest areas.

The Company has been innovative in developing their silviculture program with a mixture of artificial and natural regeneration to meet site and silviculture funding requirements. However the Committee wishes to point out that micro-site selection, planting quality, and tending require improvement.

The Committee was encouraged by the Company's combined mechanical and chemical site preparation with Pronone as a prescription for treating difficult sites close to sensitive areas.

The Committee was concerned by the extent and severity of budworm damage on the forest and the effect this will have on yield, yield predictions, and ultimately loss of productive forest area.

In general the Committee was very pleased with the Company's progress to date in regenerating the Black Sturgeon Forest and commends the Company for its treatment of fish and wildlife concerns and other forest users. However, improvements can be made in closing the regeneration gap, long term planning, responsibility for third party operations and pre-cut silviculture prescriptions. The following are the Committee's recommendations;

RECOMMENDATION No. 1: That the Minister extend the remaining periods of FMA 502900 by a further term of five consecutive years to March 31, 2011.

RECOMMENDATION No. 2: That the Company provide the opportunity for key staff to improve their skills in site selection and cultural practices for regeneration and tending using the Forest Ecosystem Classification for Northwestern Ontario and draw upon the experience of other companies and the Technology Development Unit in Thunder Bay.

RECOMMENDATION No. 3: That the Company review the status of lands cut over during the five year term for which Table 1 of the Ground Rules specifies treatment but which have received no treatment, and that the Company propose areas to be classified non-treatable to the Ministry and report any areas mutually agreed to be non-treatable in Annual Reports prior to the preparation of the 1996-2016 TMP.

RECOMMENDATION No. 4: That in the event the Company should forecast depletion levels during the second five year period to fall below the 90% level of those stated in the current TMP, the Company should take immediate action to request, with reasonable explanation, an undercut variation from the Ministry and to amend the TMP with a further surplus declaration.

RECOMMENDATION No. 5: That the Ministry clarify the responsibility for liquidated damages resulting from third party operations during a five-year period.

RECOMMENDATION No. 6: That the Company update its inventory data through operational cruises of areas to be harvested in the 1991-96 period, and request additional allocations or declare surpluses where necessary.

RECOMMENDATION No. 7: That the Company and the Ministry jointly review the current status of the NSR 2 and 3 lands based on the current survey and that based on the results of this survey the Company's commitment of NSR 2 and 3 lands should be revised.

RECOMMENDATION No. 8: That the Company and third parties improve the inspection of proposed road corridors prior to submitting plans so that the subsequent number of amendments will be reduced. In addition, that the Ministry, the Company, and third parties ensure that road locations proposed in the AWSs correspond to those in the approved TMP.

RECOMMENDATION No. 9: That the Company and third parties minimize future incursions into AOCs by ensuring that planners and field personnel are aware of the location and importance of the reserves.

7. REVIEW COMMITTEE STATEMENT

We have examined the performance of Canadian Pacific Forest Products Limited as pertaining to its obligations under the Forest Management Agreement No. 502900 (Black Sturgeon Forest) during the past five year period ended March 31, 1991.

In our opinion, the Company has conformed to the rules as outlined in the Forest Management Agreement.

signed *The Review Committee*

The Review Committee

"APPENDIX A"

TERMS OF REFERENCE FOR THE SECOND FIVE-YEAR REVIEW OF A FOREST MANAGEMENT AGREEMENT

FMA GOAL STATEMENT:

The FMA objectives are to manage Crown timber on a sustained yield basis and supply the mills identified in the agreement through the integration of harvest, renewal and maintenance activities.

1. To undertake a fair and objective review of the performance of the agreement holder vis-a-vis the obligations under the agreement, namely:
 - the preparation of a timber management plan and the preparation of annual plans or annual work schedules according to the time frames specified in the agreement and according to the manuals that have or had been approved by the Minister for this purpose,
 - the management of the forests on the agreement area and the conducting of operations in accordance with the approved plans or amendments to those plans,
 - the performance and observance of the provisions of the ground rules set out in Schedule "C" of the Forest Management Agreement including those for silvicultural operations and invoicing.
 - the maintenance of cutting operations at a level between 90% and 110% of the maximum allowable depletion (MAD) excepting that area which has been declared surplus or reserve in the approved or amended timber management plan,
 - the reforestation of NSR lands at the rate specified in the agreement,
 - the construction of roads in accordance with the approved plans or amendments and to the standards specified in the agreement,
 - the preparation and submission of accurate annual reports, according to the agreement and as specified in the manual that has or had been approved by the Minister for this purpose,
 - the extent to which the goal statement has been met and any significant impact on wood supply where there has been a variance from the objective.
2. To examine the depletion records, silvicultural records, maps of cutover areas classed non-treatable and the road construction maps of the agreement holder with regard to their adequacy and their conformity with the records or record summaries of the Ministry's designated Crown representative.

3. To examine the relationships between the predicted volume/area yields in the timber management plan with
 - (a) actual yields reported for the past 5-year period.
 - (b) yields forecasted for the next 5-year period.
4. To examine and report on the relationship between planned and actual wood harvested for the five-year period.
5. To select and field inspect silvicultural projects representative of the techniques employed and sites found on the forest for conformity with both the agreement holder's records, and the standards as outlined in Table 1 of Schedule "C" of the Forest Management Agreement.
6. To examine and report on the effectiveness of the MNR supported road construction and maintenance program and disposition of available funding by evaluating the following aspects of the program:
 - 6.1 Maturity of the FMA, existing access at the time of period renewal and post renewal road status.
 - 6.2 Effectiveness in accessing targeted and approved harvest and maintenance allocations.
 - 6.3 Third party implications.
7. To determine by field inspection the degree to which other forest users and other forest values have been accommodated in management planning and operations.
8. To meet with management staff of the company and to identify with them problem areas or concerns on the part of the agreement holder with respect to the agreement, its administration and the working relationship with the ministry staff.
9. To meet with district ministry staff, and to identify with them the problem areas or concerns on the part of the ministry with respect to the agreement, its administration and the working relationship with the company staff.
10. To meet with other users of the forest in and adjacent to the agreement area, i.e. local cottagers, hunting and fishing groups, native groups, and to identify with them problem areas or concerns on the part of the public with respect to the agreement, its administration, and the working relationship with the company and ministry staff.
11. To examine and report upon the relationship between the harvest and growth, by applying free-to-grow benchmark standards, including forest regeneration success, that has occurred on the forest during the ten-year period.
12. To make recommendations on the extension of the agreement's term according to the "Evergreen" section of the agreement, and to make such other recommendations that are judged

to be relevant to the performance or obligation of the agreement holder on the agreement area.

13. To review the recommendations of the first five-year review and report on the status of implementation.
14. To examine and report if fifth-year stocking assessments have been carried out and if the areas described in Table 1 of the ground rules assessed as failures have been retreated at company cost.
15. To examine and report if Free to Grow (FTG) assessments have been carried out and if the area approved as FTG is placed back into the forest resource inventory as productive forest land in the 1-20 year age class.
16. To examine and report on company forest management activities conducted beyond the obligations under the agreement by evaluating:
 - 16.1 Areas that have been treated for renewal at the company's expense.
 - 16.2 Areas that have been treated for maintenance at the company's expense.
 - 16.3 Examples of innovative forestry practices and beneficial forest stewardship.
 - 16.4 Areas where the company has taken a positive approach beyond the planning process to address public concerns.
 - 16.5 Company participation in the field of research and tree improvement.
 - 16.6 The existence of wood supply harvesting models, GIS systems, and any other techniques used by the Agreement Holder in determining long term (20 years) wood supply strategies.
17. To examine and report if overall, the FMA objectives, to manage Crown timber on a sustained yield basis and supply the mills identified in the agreement through the integration of harvest, renewal and maintenance activities are being met.

"APPENDIX B"

TERMS OF REFERENCE FOR THE FIRST FIVE-YEAR REVIEW OF A FOREST MANAGEMENT AGREEMENT

FMA GOAL STATEMENT:

The FMA objectives are to manage Crown timber on a sustained yield basis and supply the mills identified in the agreement through the integration of harvest, renewal and maintenance activities.

1. To undertake a fair and objective review of the performance of the agreement holder vis-a-vis the obligations under the agreement, namely:
 - the preparation of a timber management plan and the preparation of annual plans or annual work schedules according to the time frames specified in the agreement and according to the manuals that have or had been approved by the Minister for this purpose,
 - the management of the forests on the agreement area and the conducting of operations in accordance with the approved plans or amendments to those plans,
 - the performance and observance of the provisions of the ground rules set out in Schedule "C" of the Forest Management Agreement including those for silvicultural operations and invoicing.
 - the maintenance of cutting operations at a level between 90% and 110% of the maximum allowable depletion (MAD) excepting that area which has been declared surplus or reserve in the approved or amended timber management plan,
 - the reforestation of NSR lands at the rate specified in the agreement,
 - the construction of roads in accordance with the approved plans or amendments and to the standards specified in the agreement,
 - the preparation and submission of accurate annual reports, according to the agreement and as specified in the manual that has or had been approved by the Minister for this purpose,
 - the extent to which the goal statement has been met and any significant impact on wood supply where there has been a variance from the objective.
2. To examine the depletion records, silvicultural records, maps of cutover areas classed non-treatable and the road construction maps of the agreement holder with regard to their adequacy and their conformity with the records or record summaries of the Ministry's designated Crown representative.

3. To examine the relationships between the predicted volume/area yields in the timber management plan with
 - (a) actual yields reported for the past 5-year period.
 - (b) yields forecasted for the next 5-year period.
4. To examine and report on the relationship between planned and actual wood harvested for the five-year period.
5. To select and field inspect silvicultural projects representative of the techniques employed and sites found on the forest for conformity with both the agreement holder's records, and the standards as outlined in Table 1 of Schedule "C" of the Forest Management Agreement.
6. To examine and report on the effectiveness of the MNR supported road construction and maintenance program and disposition of available funding by evaluating the following aspects of the program:
 - 6.1 Maturity of the FMA, existing access at the time of period renewal and post renewal road status.
 - 6.2 Effectiveness in accessing targeted and approved harvest and maintenance allocations.
 - 6.3 Third party implications.
7. To determine by field inspection the degree to which other forest users and other forest values have been accommodated in management planning and operations.
8. To meet with management staff of the company and to identify with them problem areas or concerns on the part of the agreement holder with respect to the agreement, its administration and the working relationship with the ministry staff.
9. To meet with district ministry staff, and to identify with them the problem areas or concerns on the part of the ministry with respect to the agreement, its administration and the working relationship with the company staff.
10. To meet with other users of the forest in and adjacent to the agreement area, i.e. local cottagers, hunting and fishing groups, native groups, and to identify with them problem areas or concerns on the part of the public with respect to the agreement, its administration, and the working relationship with the company and ministry staff.
11. To make recommendations on the extension of the agreement's term according to the "Evergreen" section of the agreement, and to make such other recommendations that are judged to be relevant to the performance or obligation of the agreement holder on the agreement area.

12. To examine and report on company forest management activities conducted beyond the obligations under the agreement by evaluating:
 - 12.1 Areas that have been treated for renewal at the company's expense.
 - 12.2 Areas that have been treated for maintenance at the company's expense.
 - 12.3 Examples of innovative forestry practices and beneficial forest stewardship.
 - 12.4 Areas where the company has taken a positive approach beyond the planning process to address public concerns.
 - 12.5 Company participation in the field of research and tree improvement.
 - 12.6 The existence of wood supply harvesting models, GIS systems, and any other techniques used by the Agreement Holder in determining long term (20 years) wood supply strategies.
13. To examine and report if overall, the FMA objectives, to manage Crown timber on a sustained yield basis and supply the mills identified in the agreement through the integration of harvest, renewal and maintenance activities are being met.

APPENDIX C

Glossary of Terms

Annual Allowable Cut (AAC): see Maximum Allowable Depletion

Area of Concern (AOC): Land areas within an FMA management area designated for uses other than or in addition to timber production.

Annual Work Schedule (AWS): A statement showing the order and extent of all work of any nature to be carried out during one year consistent with the Timber Management Plan.

Artificial Regeneration: The renewal of a forest area by artificial means either planting or seeding.

Barren and Scattered (B&S) : Productive forest land which, because of natural or artificial disturbance, contains only scattered trees or no trees at all with either shrub cover or bare soil, but no significant amount of regeneration. Treatment is required to restore such areas to productivity.

Bracke Scarifier: A mechanized piece of equipment, usually drawn by a skidder or a tractor, fitted with one or more specially designed three or four point harrows.

Bypass : Forest stands or portions of stands which were found unharvestable at the present time.

Crown Management Unit (CMU) : A parcel of Crown land where the harvesting and regeneration of forested areas are the responsibility of the Ministry of Natural Resources.

Declared Surplus: The difference between the estimated surplus and the area required to offset fibre shortages due to possible changes in fibre supplies.

Deferment: A temporary exclusion from harvest; also the area excluded.

Designated Crown Representative (DCR): The Ministry of Natural Resources staff member assigned to administer activities on a specific Forest Management Agreement area.

Forest Ecosystem Classification (FEC): The Provincially recognized classification system for identifying plant communities predominantly consisting of trees and other woody vegetation growing within close proximity to each other.

Forest Resource Inventory (FRI): A survey of an area to determine such data as area, condition, timber volume and species.

Forest Management Agreement (FMA): A parcel of Crown land where the harvesting and regeneration of forested areas are the responsibility of the Agreement Holder.

Free to Grow (FTG): Regenerated stands that meet or exceed minimum stocking, height, and/or height growth rate as specified in the ground rules and judged to be essentially free from competing vegetation.

Geographic Information System (GIS): Computer assisted mapping and data processing system.

Ground Rules: The specifications, standards, and other instructions (mostly silvicultural) to direct management on management unit areas for a term concurrent with the operating period of the Timber Management Plan.

Integrated Resource Management (IRM) : Management of forest resources to produce a variety of products and services, such as wood fibre, fish, wildlife, and recreational activities, while maintaining the productivity of the renewable components and the integrity of the environment.

Liquidated Damages: An amount equivalent to stumpage charges payable to the Crown for the volume of timber on an area designated for harvest in the TMP but left uncut at the end of the plan period.

Maximum Allowable Depletion (MAD) : The calculated amount of area from which timber may be depleted over the five-year term of a Timber Management Plan by any means, including harvesting, fire, insects, disease, inoperability, or because of the allocation of the area to other uses to fulfil the objectives of management.

Modified Management Area (MMA) : An area that requires particular management prescriptions in order to maintain or improve resource values such as fish and wildlife habitat, forest genetic resources, scenic areas and other recreational and tourism values. MMAs have been replaced by Areas of Concern in the planning process.

Not Satisfactorily Regenerated (NSR) : Productive forest land not stocked to a specific standard or which has not attained free-to-grow status.

Ontario Wood Supply and Forest Production (OWOSFOP) : A computerized inventory projection model used to calculate future wood supply based on area regulation.

Prescribed Burn: A controlled fire that is used as a silvicultural prescription to reduce slash and other forest debris and prepare the site for artificial regeneration.

Protection Forest Reserves (PFR) : Production forest stands (site class X, 1, 2, and 3) which have been identified by survey as areas with potential problems when harvested or difficult to silviculturally treat.

Silviculture: The science of cultivating trees.

Silviculture Information System (SIS): A record keeping system used for the accumulation of silvicultural treatment reports and subsequent assessments which in turn are used to evaluate the effectiveness of the prescriptions and to predict future results.

Sustained Yield: The volume of timber that a forest can produce and that can be harvested to achieve a continuous balance between growth and harvest.

Technology Development Unit (TDU): An organization within the Ministry of natural Resources whose mandate is to evaluate, adapt, or develop technology, methodology, and information, and transfer it to client groups in the field.

Timber Management Plan (TMP): The twenty year plan, renewable every five years, which outlines all road construction, harvesting, regeneration, and tending activities that are to be undertaken on a specific area of licensed forest.

Waferboard: A structurally engineered panelboard product made from wafers of wood, usually poplar.

Withdrawals: Areas which are designated for uses other than wood production, or which significantly restrict wood production. Withdrawals are actually removed from the licence/FMA area.

Working Group (WG): An aggregate of forest stands, including potential forest areas assigned to this category, having the same predominant species, and managed under the same rotation and broad silvicultural system.

